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Customization of Reporting System Using My'ptp' Manager

Satya Nadupalli

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Customization of Reporting System Using My'ptp' Manager

by

Satya Nadupalli

A Starred Paper

Presented to the Graduate Faculty of

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For the Degree

Master of Engineering Management

December, 2015

Starred Paper Committee:

Ben Baliga, Chairperson

Hiral Shah

Balasubramanian Kasi

Abstract

This report was mainly intended about how the custom reporting tool was developed as per the client requirements without deletion of the core SAP functionality but enhancing it. The main moto of this report was to showcase the developed customizations in SAP Purchasing and Materials Management and match them with the latest trends and lean management procedures adopted in current manufacturing trends. Which involved Methodology involved using ABAP programming language and converting current Sap SQVI report with ABAP list viewer grid. The major outcome from this project was to deliver a more user friendly report and easier access to users when compared to normal standard SAP report.

Acknowledgment

I'm really thankful to my advisor Dr. Ben Baliga for his guidance. He is always been a source of knowledge for me, guided me in every step, and shared his knowledge. He has been most generous and understanding and took his valuable time to read this paper. Dr. Baliga's insightful suggestions and recommendations were very helpful to present this project effectively.

I would also like to thank Dr. Hiral Shah and Dr. Balasubramanian Kasi for their guidance and encouragement throughout the entire study. I'm thankful to the Department of Engineering Management and St. Cloud state university for providing the resources. I'm thankful to my friends and family for their support and encouragement throughout my Master's program.

I would like to extend my thanks to C.E.O and founder of the Mygo Consulting Inc. Seshu Reddy Marram Reddy for allowing me and helping to work on the latest products. I also thank my lead Sheshank Vyas for helping me to understand the concepts behind all the products and for knowledge sharing.

Table of Contents

	Page
List of Tables	6
List of Figures	7
Chapter	
I. Introduction	9
Introduction	9
Problem Statement	10
Nature and Significance	10
Objective of the Project	11
Project Questions	11
Limitations of the Project	12
Definition of Terms	12
Summary	13
II. Background and Literature Review	15
Introduction	15
Background Related to the Problem	15
Literature Related to the Problem	16
Literature Related to the Methodology	35
Summary	39
III. Methodology	40
Introduction	40

Chapter	Page
Design of Study	40
Data Collection	45
Data Analysis	49
Summary	52
IV. Data Presentation and Analysis	54
Introduction	54
Data Presentation	54
Data Analysis	62
Summary	64
V. Results, Conclusion, and Recommendations	65
Introduction	65
Results	65
Conclusion	66
Recommendations	71
References	72

List of Tables

Table	Page
1. SAP Purchase Order Material Management Table with Technical Field Name	46
2. SAP Technical Table Name Along with Technical Field Names where Data is Being Pulled	47
3. Purchasing Document Header Level Data	58
4. Purchasing Document Item Level Table	59

List of Figures

Figure	Page
1. SAR R/3 Server Supply Chain Management and Other Core Modules	18
2. Purchase Requisition Manager Screenshot	23
3. Purchase Order Management Screenshot for MyPTP Manager	26
4. Vendor Performance Screenshot for MyPTP Manager	27
5. Easy Procure Screenshot from MyPTP Manager	28
6. Vendor Reminder Screenshots from MyPTP Manager Product	30
7. Overview Screenshot for MYGO Products Developed	31
8. SAP Standard Procurement to Pay Process Cycle	32
9. SAP Standard ASAP Methodology Process Map	36
10. SAP Screenshot that Displays Table and Field Names	48
11. SAP Logon 730	50
12. Sample Form of ABAP ALV List Viewer	50
13. ABAP Editor Workbench	52
14. Major Inner Joins that Links Various Fields from Where the Data is Interlinked	55
15. Output Display Screen	56
16. Output Screen Purchase Order History Display	59
17. Display of the Purchase Order History in Popup Window	60
18. Validation of Purchase Order	61
19. Business Add IN Builder Standard SAP	62

Figure	Page
20. BADI Technique Implementation in Current Program	63
21. SAP SQL Query Report Initial Login	67
22. Old Report Selection Screen	68
23. Old SQVI Output Screen	68
24. New ABAP ALV Grid Report Selection Screen	69
25. New ABAP ALV Output Screen	70

Chapter 1: Introduction

Introduction

This project mainly concerned about generating and developing the custom reports for the end user i.e. as per the Businesses requirements using various custom enhancements to the current standard SAP system in various areas of supply chain management modules like such as Sales and Distribution, Materials Management and Warehouse Management, FICO and other modules. This project is currently limited to Materials Management Module which was successfully developed and implemented at client's location. This project named '**Customization of Reporting tool using MyProducts**' and is it is involved and associated with **MygoConsulting Inc.** and other ABC company (Confidential data).

Enterprise Resource Planning is key factor for every manufacturing sector that plays a key role in Supply Chain Process Management. Which ranges from Procurement, Sales, Distribution, Finance, Planning, Maintaining, Controlling and so on So five gentlemen former IBM Engineers in 1975 developed an effective tool that managing complete supply chain process... Called SAP (System Applications and Products in Data Processing) to manager business operations and customer relations. As of today the company has over 291,000 customers across in 190 countries with an annual revenue of 17.56 Billion Euros. Sap offers various application for Enterprise Resource Planning which is a Business Process Management which gives freedom to organizations to use integrated application that manage each and every department in an organization which including Production

Planning , Finance , Cost ,Manufacturing or Service Delivery, Marketing ,Sales, Inventory Management, etc. (SAP ERP - Wikipedia, the free encyclopedia, n.d.).

Problem Statement

Manufacturing companies generate an overall report on the purchases that was made throughout the month and year to track down the records about the materials purchased, delivery dates, On-time delivery status, vendors performances, material availability checks like how many to get procured or how many to be produced, financial related information, shipping related details, vendor contacts and their information forecast planning and materials required for productions soon so forth. So current SAP standard reports those are designed are not customized as per current latest manufacturing techniques which were not user friendly for which user has to use multiple transactions and multiple platforms which further leading to waste of time and effecting quality and also more users needed in order to get quality outcome without any errors and without any gaps while generating the report.

Nature and Significance

Mygo Consulting, Inc.'s main motive was to provide new enhancements and develop them to provide its customers as per current lean manufacturing standards. The current SAP System has a lot of limitations that generate many issues and companies need to invest more money in order to get the job done. Also with this sap limitations the reports that get generated are not user friendly as part of it multiple transactions with multiple windows need to be performed in order execute the report which also give lot of inconsistencies and leads to mistakes .So the major intention of

significance of the project customization of Delivery reports using MyPTP manager product. So this product gives lot of flexibility to users which overcomes the about stated issues.

Objective of the Project

The major objective of this report was to drill down multiple transactions in to a single window to make user more comfortable and easier in accessing the information which reduces using multiple usage of multiple transaction code... Basically major intention is to provide user friendly report and achieving good customer satisfaction with 99% quality this project also intended to emphasize on multi functionality for Materials Management in Procure to Pay cycle process. Project was developed using lean 5S methodology which would eliminate Muda. It will also time saving performance of the report is reduced to great extent when compared to standard report.

Project Questions

1. Is this user friendly project implemented at any client system?
2. Approximately how many transactional steps or process steps were minimized?
3. What 5S lean techniques were used in this report?
4. How much performance time got reduced while running the report in a widespread?

Limitations of the Project

This report is limited to only implementing the developed application in businesses. Limited in not revealing the Companies name that are using this product as part of confidentiality issue, also showing the results from this project statistically which may need the data of the companies. Also Sales, Revenues and profitability those were generated by this report will not discussed.

Definition of Terms

- SAP: System Applications and products in Data processing
- MM: Materials Management–Materials managing, procuring and producing
- PTP: Procurement to Pay process cycle–material procurement to invoicing vendor
- PR: Purchase Requisition–blue print copy of things to get purchased it's an internal document
- PO: Purchase Order–legal document involving vendor details and contract agreement.
- ABAP: Advanced Business Application Programming–programming language that is used in SAP to develop the fields, tables and entire functionality.
- Plant: It is an organizational unit serving the entire enterprise according to production, procurement, maintenance, and material planning. So basically plant is an operating area or branch within the company every plant has address location material valuation, etc.

- **Company:** A company is an organization unit in accounting which representing the business organization each and every basic data is stored in this can also be called as client.
- **Purchase Organization:** It is an organization unit in Logistics which procures materials and services negotiates conditions of purchase with vendors. And multiple purchasing organizations can be assigned to multiple companies and plants.
- **Goods Receipt:** It is a term from Inventory Management denoting a physical inward movement of goods or materials.
- **Goods Issue:** It is reduction in warehouse stock due to withdrawal of stock or delivery of goods to customer.

Summary

This chapter covered a brief introduction about SAP, its various Business Suites that was seen in current market, it also describes its history about R/3 structure, and transformation to newer system called ERP Central Component ECC which is current in practice. This chapter also provides a brief history about Mygo Consulting. Inc. where project was executed and it showcase what all products it developed in the area of SAP ERP. It also describes about the significance and nature of these products and why these products need to be used by various manufacturing sectors. Complete Chapter 1 was mainly about giving a gist or introduction about the software, company where project executed, why these developments were needed and what are limitations of the project were briefed in this

chapter. Next chapter, was all about more theoretical part of the problem stated above, its history, its necessity in detailed will be explained, and in depth knowledge sharing and information will be drafted in the next chapter.

Chapter II: Background and Literature Review

Introduction

This chapter will give a clear idea about the background problem in detail also provides the literature to the problem so that reader can refer to this literature for further analysis and to get knowledge on the problem and in depth related literature review related to the problem and also literature regarding the methodology will also be stated in the Chapter II. A large amount of information was obtained from various articles published on the issue that is presented in the chapter. Additionally, a brief explanation of literature related to methodology is also presented in this chapter.

Background Related to the Problem

Current SAP has set lot of limitations to User who are currently using SAP every manufacturing companies used to generate SQVI based reports. The purpose of the report was to change the current Purchase Order report process that was designed from SAP Query 'SQ01' which tracked the Purchase Order history with different movement types and not all information was readily available and complex. Businesses requested Mygo Consulting Inc. to make user friendly, By adding new fields to the SAP Query 'SQ01' allowing users to see the complete information on one screen that would generate a popout with the following information:

1. Purchase order history which is supposed to be tracked what all materials were purchased in how much quantities those were purchased and all.
2. Report to be pulled based on SAP standard movement types.
3. Material Master information based on Material Number.

4. Vendor Master i.e. information related to vendors need to be pulled from vendor master data and its related technical tables.

Literature Related to the Problem

As a company, MygoConsulting has enormous depth when it comes to supply chain management. Our consultants have extensive experience leveraging SAP in order to make the PTP (procure-to-pay) process more efficient. MyPTP Manager plugs several gaps that are inherent in standard SAP as it comes out of the box.

Sap software is most successful today because of the following:

- It is most secured data base because of Governance, Risk and compliance module which limits access control to users, restricts and monitor each and every step that a user does.
- It is Multi- Lingual, in Non-Unicode System 41 languages are available and in Unicode system approximately 474 native and historical languages exists.
- It has Multi- Currency
- Best Business practices
- Real time processing with integrated suite of client to server applications.

This Sap R/3 architecture contains layers such as:

- Presentation layer: Layer where user work with SAP Graphical User Interface which interacts with Database layer via Application layer.
- Application layer: Interaction layer between Presentation layer and Database layer which is to perform/ process business-logic and this work

load is split among multiple servers applications so that user can get output more quickly.

- Database layer: This layer stores and retrieves data as per SQL queries which are generated by ABAP and Java applications and this database layer may exist on similar or various physical locations. It consists of two components one of which is Database Management System (DBMS) and other one is the database itself. Now SAP has created and developed its own database called as HANA (High Performance Analytic Appliance) which uses in-memory database technology which allows processing of huge amounts of real time data in a short time. Database layer in sap also has applications those consist of program code, screen definitions, functional modules and other various components and these are stored in special section of database called R/3 Repository (R/3 Architecture - Network Integration Guide (BC-NET) - SAP Library, n.d.).

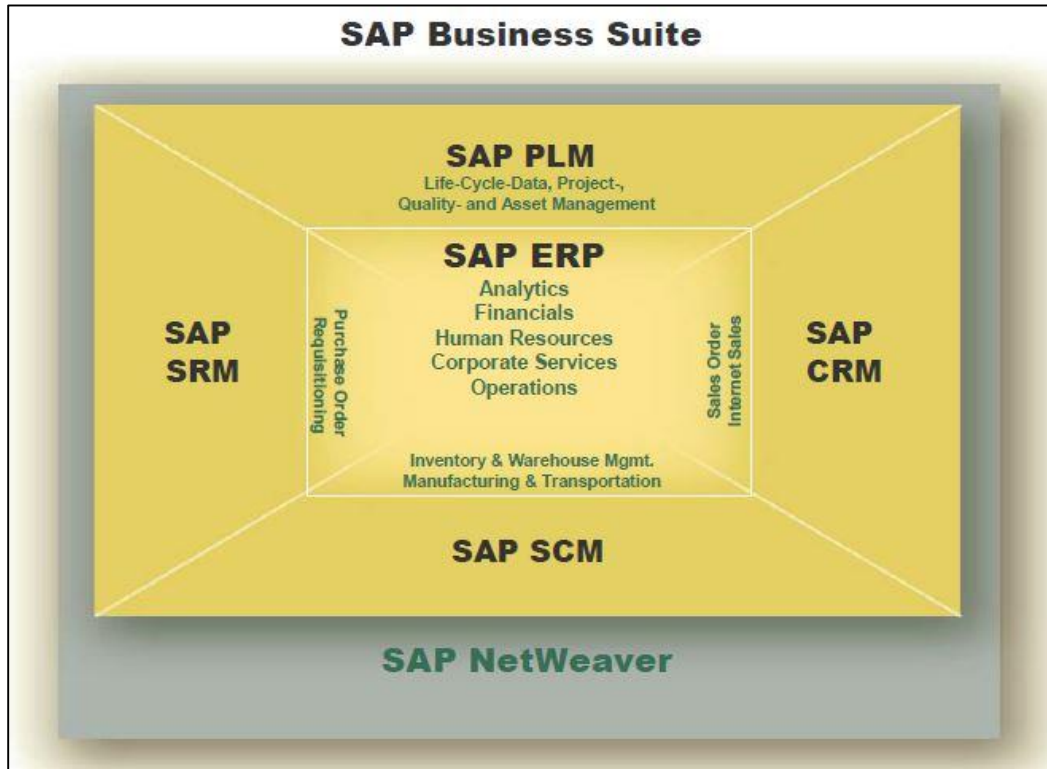


Figure 1: SAP R/3 Server Supply Chain Management and Other Core Modules (Mygo Consulting Inc., n.d.)

SAP Business Suites: Sap offers multiple applications along with ERP in order to meet customer requirements the most crucial and key applications are:

1. **SAP SCM module**: Sap Supply Chain Management module which focus Production Planning, Business forecasting, Sales and Distribution, Materials Management etc. SCM enables the forecasting the business, analyze and plan of supply demand and order bases capacity this supply chain enables the majority customer satisfaction with less investment.
2. **SAP CRM module**: Sap Customer Relationship Management is one of the best tool that handles supporting of user End–End main intention is to manage and maintain relation between firms and customers. It is effective

tool which can bridge the gap between both the customer and firms major goal or major outcome from this module is providing best centric customer service , discover new customer and perpetuating the relationship.

3. **SAP PLM module:** Sap Product Lifecycle Management one best application that provides 360° support for all product related processes from initiation of idea to outcome of the manufactured product. It gives unique ability to organizations to perform various key business processes both with sap and non-sap systems.
4. **SAP SRM module:** Sap Supplier Relation Management, application that evaluate, enable and engage firms with suppliers more effectively which may in turn reduces the costs, improve customer satisfaction, increase in profits etc. Basically this application is a comprehensive approach that manage enterprise interactions with organizations which supply goods and its services. This SRM is also a part of supply chain management.
5. **SAP APO module:** Sap Advanced Planning and Optimization it is also one of the important key application in supply chain management so this Sap APO is a real time application that is integrated with other modules like Production planning, Sales and Distribution, Finance and controlling, etc. It is an effective suit that including several supply chain planner applications which focus on supply chain while forecasting, planning and optimization was done (About SAP Modules | SAP Modules List Overview, n.d.).

New Sap System ECC: SAP ERP is an Enterprise Resource Planning software developed by German Company SAP SE which incorporated key functions in the organization latest version SAP ERP 6.0 EHP 7 package. Sap set of middleware systems which helps data migration from existing legacy systems to SAP system, i.e., in simple language from Non SAP to SAP system. As a result new marketing trends and changes newer versions were released previous SAP Web Application Server now transformed in to NetWeaver and later, complete architecture changes were took place with the introduction of MySAP ERP edition where R/3 structured layer component got transformed in to Sap ECC ERP Central Component which enable Graphics User Interface.

So MygoConsulting High quality consulting and extent support services for Enterprise Resource Planning, firm started in the year 2011 and since then many customized solutions were provided it to clients at Chicago and were successful , as a result of this experiences in the end of the year 2014 an idea that was put forward in developing the customized, enhance and user friendly concept oriented to provide best customer experience called 'MyProducts' creating custom solutions those weren't in standard Sap system. These products were exhibited in the SAP program called SAP SAPPHERE which has held at Florida in the month of May 2015 (currently documentation is taking place to get official approval from SAP headquarters situated as Mountain View , California.) Current project paper is related to Materials Management Module where few techniques involving and developed as per current

procurement market trends, it also has other products those were developed in various other modules too and the other products are:

1. MyEcm–Engineering Change Management.
2. MySD monitor–Sales and distribution module.
3. GateEntry–Logistics Handling Management related.
4. MyITS Mobile–Warehouse Management
5. MyWIP–Work in Progress in Inventory Management
6. MyProduct Spec–Production Order, Process Order related.

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10. MyITS Mobile–Warehouse Management
11. MyWIP–Work in Progress in Inventory Management
12. MyProduct Spec–Production Order, Process Order related (Mygo Consulting Inc. | SAP Centric, n.d.).

MyPTP Manager is a product suite with multiple modules that will drive supply chain management, end to end:

- **Purchase Requisition Manager**
- **Purchase Order Manager**
- **Vendor Performance**

➤ **Easy Procure**

➤ **Reminder**

PR Requisition

Purchase Requisition Items

Input one or more selection values for the approved purchase requisitions

Purchase requisition item selection				
Requisition number	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
Requisition item	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
Reqn document type	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
Req account assignment	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
Reqn series (first 4 chars)	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
Purch group (buyer)	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
OOM Status	<input type="text"/>	<input type="button" value="→"/>		
Plant	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
Reqn request (create) date	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
Item delivery date	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
Fixed Vendor	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
Desired vendor	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
Purchase Requisition Account Assignment				
Profit Center	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>
WBS Element	<input type="text"/>	to	<input type="text"/>	<input type="button" value="→"/>

Figure 2: Purchase Requisition Manager Screenshot (Mygo Consulting Inc., n.d.)

Figure 2, Purchase Requisition Manager (above) is a reporting tool that will provide you and end-end detailed information that is related to Purchase Requisition. Purchase requisition is a request that is made to purchasing organization to procure certain list of material. Purchase requisition is an internal document; specifically it remains within the organization. If purchase requisition is approved then changes are possible only to limited extent. It is selection criteria where data can be tracked either using a range of Requisition number or document types which SAP has given, or can be tracked using the vendor information or plant or profit center etc. There are various types of Purchase Requisitions that exist and they are:

- Standard Purchase Requisition: Procuring Raw material or Semi-finished material in order make a complete and finished product.
- Subcontracting it is giving the raw material to vendor and complete the manufacturing process part and getting finished material.
- Consignment means that the goods procured and paid to vendors however they are still in vendor's ownership, whereas company is keeping the material on stock and is able to sell it directly Goods becomes only the property of company only in the case of consuming. In both cases, the base of the process is a goods receipt for vendor consignment goods. After that, will have consignment goods in our warehouse to sell the goods from Consignment stock, we can do a stock transfer from warehouse to store consignment stock and sell directly from consignment stock
- Stock Transport Order: In this type goods are supplied within the company from one plant to the other plant the delivery process can be done either in Inventory Management or in the shipping component of logistics execution. Stock transport order can also be done using the delivery process an outbound delivery can be created based on purchase orders and then good issues can be posted
- Subcontracting: In this process the goods are given to vendor in order for assembling all the raw materials to make it as a finished good and in turn product is ordered by company as Purchase Order he components required by the vendor to manufacture the ordered product are imported in

the purchase order through the BoM (Bill of Materials), and they are provided to the vendor. After the contractor has produced the finished product a good receipt can be posted as part of confirming the receiving of goods

- Third Party processing is if components to be provided to a vendor are not supplied or produced by company but if it is a third-party, components can be ordered from the third-party and specify the subcontractor in the purchase order as the delivery address. At goods receipt the components are posted directly to the stock of the material provided to vendor in order to procure components for a sub contract order from a vendor and have them to get delivered direct subcontractor purchase order with different delivery address to be created.
- Returnable Transport Packaging few hazardous and liquefied materials like Oxygen cylinder , Liquefied petroleum gas , water cans ,are very difficult to send without packing materials so transport should transport or pack with container. But these materials are very expensive. So vendor will ask return these material once you utilize the material. These process generally called as a Returnable Transport Packaging.
- Pipeline handling the company needs not to order or store the material involved. It is obtainable as and when required via a pipeline (for example, oil or water), or another style of cable (such as electricity). The material that is consumed is settled with the vendor (seller) on a regular basis.

Purchase Order Manager:

The screenshot displays the 'Purchase Order Manager' interface with three tabs: 'General options', 'Processing Options', and 'Reporting Options'. The 'General options' tab is active, showing a form with the following sections:

- Program Parameters:** Includes fields for Purchase Organization, Plant, Purchasing Group, Vendor, Material, and Customer Promise date. Each field has a 'to' field and a selection button.
- past due (+):** Includes a field for 'Days past due baseline date' (04/15/2015) and a 'Delivery Date' field.
- Account Assignment Selections:** Includes fields for Sales document, Cost Center, Asset, Order, Network, and WBS. Each field has a 'to' field and a selection button.
- Open GR Quantity or Invoice Amount Options:** Includes radio buttons for 'GR Open Quantity', 'Invoice Open Amount', and 'GR or Invoice Open'.
- Currency Option:** Includes radio buttons for 'PO Document Currency' and 'Common reporting currency'.

Figure 3: Purchase Order Manager Screenshot from MyPTP Manager (Mygo Consulting Inc, n.d.)

Figure 3, Purchase Order Manager, was also a similar reporting tool that will provide each and every detail related to Purchase Order History. When SAP ERP was introduced procurement is done efficiently with respect to time and cost. Procurement can be done for various types of goods and services and it starts with creating purchase order that is a formal document given to vendors and it include list of goods and materials that are to be procured. Purchase Order is nothing but a legal document that involves vendor contract and other financial information here in Figure 3 report can be selected based in Material, Delivery date, and Open quantity, i.e., when only partial delivery was done or either based on Invoice of the document etc. So, accordingly purchase order can be created for different types of procurement. Here also there are different types of Purchase Orders exists and they are:

- Consignment Purchase Order: In consignment material is available at organization store premises, however it still belongs to the vendor (seller)/Owner of the material so when utilized It has be paid to vendor.
- Stock Transfer Purchase Order: In stock transfer goods are procured and supplied within a company. One plant order the goods internally from another plant (receiving plant/issuing plant). The goods are procured with a special type of purchase order–the stock transport order.
- Service Purchase Order: Here third party provides the serviced to the companies that include maintenance like electricity, oiling to machines.

Vendor Performance:

The screenshot shows a web-based form titled "Vendor Performance". It contains a table for selecting criteria. The table has columns for the criterion name, a value input field, a "to" label, another value input field, and a selection icon (a yellow square with a black crosshair). The criteria listed are: Vendor, Purchasing Group, Delivery Date, Purch. Organization, Material, Plant, Storage Location, Purchasing Doc. Type, Document Date, Company Code, ABC Indicator, and Time. The "Time" criterion has a value of "5" entered in its input field.

Vendor Performance				
Selection Criteria				
Vendor		to		
Purchasing Group		to		
Delivery Date		to		
Purch. Organization		to		
Material		to		
Plant		to		
Storage Location		to		
Purchasing Doc. Type		to		
Document Date		to		
Company Code		to		
ABC Indicator		to		
Time	5			

Figure 4: Vendor Performance Screenshot from MyPTP Manager (Mygo Consulting Inc., n.d.)

Vendor Performance is a reporting tool that will help you easily rate all of your existing vendors based on common critical parameters:

Fulfillment rate

- On time delivery

By utilizing this information, it will be easy to divert more of your business to vendors who have the highest performance rating. You can easily run the report and filter by suppliers for a particular raw material, and then pick the best vendor based on the report data. Figure 4 is also a selection screen where certain parameters can be given in order to track the vendor's performance such parameters are ranging from purchasing group i.e. the person who is responsible for buying the products, plant the physical location where the materials are processed, storage location the place where materials procured are stored, the ABC indicator which is used in the case of Kanban and JIT techniques, etc.

Easy Procure:

Easy Procure

Vendor

Vendor

Purchase Organization ☒

LB restriction profile

Excess Period Indicator ☒

Number of Excess Periods 1-999

Checking Rule

☐ Purchase Order

☒ Purchase Requisition

☐ Check Source List

Material

Material to

Material Group to

Plant ☒ to

Purchasing Group to

Purchase Requisition to

Document Type to

Requisition Date to

Delivery Date to

Item Category to

MRP Type ☒ to

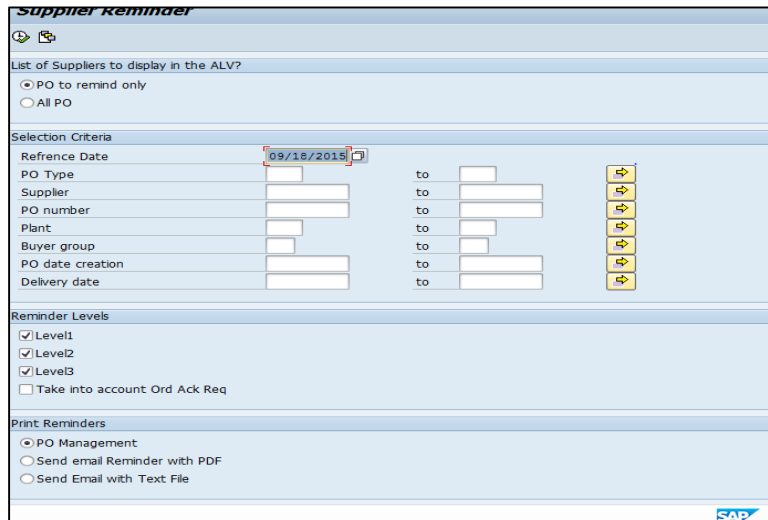
☐ Dual Restriction

SAP

Figure 5: Easy Procure Screenshot from MyPTP Manager (Mygo Consulting Inc., n.d.)

Figure 5 illustrates the easy procurement process which is how things can be procured in simpler way, it is also a selection screen where parameter like excess Period indicator which tells whether procurement can be done monthly basis or weekly basis or yearly. Imagine vendors have minimum order quantities, and/or give discounts if purchased more than a certain dollar amount of goods. Then, add the complexity of having a multi-location environment, and quickly the process of optimizing procurement cost becomes nearly unmanageable. Hence this too was designed specifically to make everyday procurement processes more efficient, without negatively affecting existing functionality. Easy Procure will allow you to take into consideration all the various vendor requirements, and set limits for those vendors. Based on those limits, you will be able to combine multiple purchase requisitions into one purchase order that optimizes procurement cost, and transportation cost. Easy Procure will take into consideration any forecast models and ranges of coverage for materials.

Reminder:



Supplier Reminder

List of Suppliers to display in the ALV?

☒ PO to remind only
☐ All PO

Selection Criteria

Reference Date: 09/18/2015

PO Type: to

Supplier: to

PO number: to

Plant: to

Buyer group: to

PO date creation: to

Delivery date: to

Reminder Levels

☒ Level1
☒ Level2
☒ Level3
☐ Take into account Ord Ack Req

Print Reminders

☒ PO Management
☐ Send email Reminder with PDF
☐ Send Email with Text File

Figure 6: Vendor Reminder Screenshots from MyPTP Manager Product (Mygo Consulting Inc., n.d.)

Figure 6 is Vendor reminder concept, it was designed to send the reminders to vendors in order to deliver the material on time. Figure 6 is the screen criteria screen with various parameters like Po type like standard or stock transfer or pipeline or subcontracting etc. This module will allow you to utilize customized inbound and outbound reminders that will be triggered a pre-defined number of days prior to a shipment. The vendor will get a PO reminder, which can in turn be updated if any changes need to be made, and can be returned back to purchasing in order to update the PO in the system. By using Purchase Requisition (Procurement Process Cycle I Procure to Pay Process, n.d.). Number that was created or Inbound where communication was sent from vendor to company and where as in outbound communication is vice versa. From Figure 6 which was said to be the selection screen where inputs are given based on the selected criteria the functionality would

run and open outputs in a widespread sheet. It has reminder levels as well which would set as alarm and send it to vendor which will help in sending the goods on time.

Overview screen of all Mygo products developed:

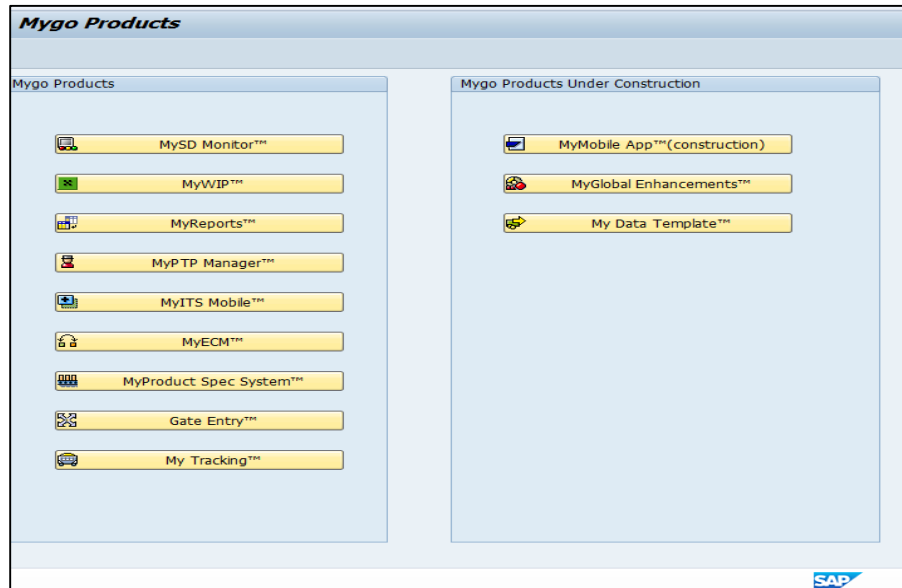


Figure 7: Overview Screenshot for MYGO Products Developed (Mygo Consulting Inc., n.d.)

Figure 7 is the overview screen of various supply chain management modules, SD monitor which is related to Sales and Distribution MyWIP my work in progress, MyReports ABAP ALV grid display, MyECM documentation if changes are done in this document, which can be tracked. Figure 7 shows the complete overview of the products those were developed which begins from SD monitor which is related to sale and distribution module to My Tracking warehouse management.

So this project is related to MyPTP Manager which mainly deals with Purchasing, Vendors, Materials Procurement and Payment to the vendors.

Literature overview of SAP materials management module. This project MyPTP manager is based on the SAP module called Materials Management module where all the Materials Procurement, Material movements, Purchasing, Vendors related etc. are seen and all this functionality is done in the major process cycle in Materials Management called Procure to Pay cycle which is said to be the core and backbone for Materials Management process.



Figure 8: SAP Standard Procurement to Pay Process Cycle (Mygo Consulting Inc., n.d.)

From Figure 8, Procurement to Pay cycle consist of the following:

1. Material Requirement Planning
2. Vendor Selection
3. Request for quotation

4. Purchase Requisition
5. Purchase Order
6. Goods Receipt
7. Goods Receipt Invoice
8. Invoice verification
9. Payment to Vendors

Material requirement planning: Refers to procedure used to forecast and manufacture production schedule to identify and list which materials are needed for supplying or for producing. This also controls the pricing, MRP procedure and Material valuation. MRP controller in every manufacturing sector was assigned to carry out this Material requirement planning.

Vendor selection: It is the most crucial step in the procurement process where materials are procured from, and this can be from procurement by fixed vendors or on time. Fixed vendors are the one who has made a long time contracts with the company to supply the material whereas onetimes are just ship the material only once and no contract exists and all this vendor related information is stored in standard sap table/ section called Vendor Master where all the legal entities like Tax, Address related are maintained.

Request for quotation: Once the vendor selection is finished, a tender notification will be released to all the vendors in order to provide the best quote available for purchasing the material what company needs it is in general like

requesting potential vendors to submit a quotation for materials or services and this quotation may contain vendor's terms and condition.

Purchase requisition: Once the potential vendor along with the best quotation is selected now an internal request for purchasing the goods is made which is said to be the Purchase Requisition in SAP terminology for which a rough estimation date is given to vendor and asking the exact date when materials can be delivered. This creation of Purchase Requisition can automatically made by Materials Requirement Planning or Manually this is not the legal document.

Purchase order: A purchase order is a formal request or an instruction from a purchasing organization to a vendor or a plant to supply or provide a certain quantity of goods or services at or by a certain point in time. It is a legal document. Delivery of the total quantity of material (or performance of the total volume of services) specified in a purchase order item can be spread over a certain period in a delivery schedule, consisting of lines indicating the individual quantities with their corresponding planned delivery dates. This PO usually specifies payments, Delivery date, Statistical Delivery date, Material Group, Material type, Material Quantity, Price, etc.

Goods receipt: Goods Receipt is nothing but in general it is a document that entities that goods are received to the plant, post goods receipts referencing a preceding document. This document tells what and how many goods got delivered, which vendor sent whether it was sent in correct quantity perfect quality materials and exact material that a plant is looking for its production.

Goods receipt invoice: It is matching the goods that company receives and check the correct quantity was received as ordered in Purchase Order, It verifies price, quantity, and payment terms. Goods movement are entered in to the system with reference of Purchase order and Goods receipt material documents are posted this document automatically update general ledgers and stock accounts

Invoice verification and payment to vendors: Vendor Invoice is created with reference to Purchase Order, Goods Receipt and Invoice is verified in terms of prices and quantity once all the data related to this verified financial department pay vendors by check payment net banking (Procurement Process Cycle I Procure to Pay Process, n.d.).

Literature Related to the Methodology

The methodology used to create and generating customizing reports using Procure to Pay cycle is followed as per the standard ASAP Accelerated SAP method. The main purpose is to help SAP implementation in the most efficient manner as possible its goal is to optimize time, people resources and other related quality .It mainly focuses on tools

And training and it wrapped up in main five phases process oriented road map for guiding implementation and as follows:

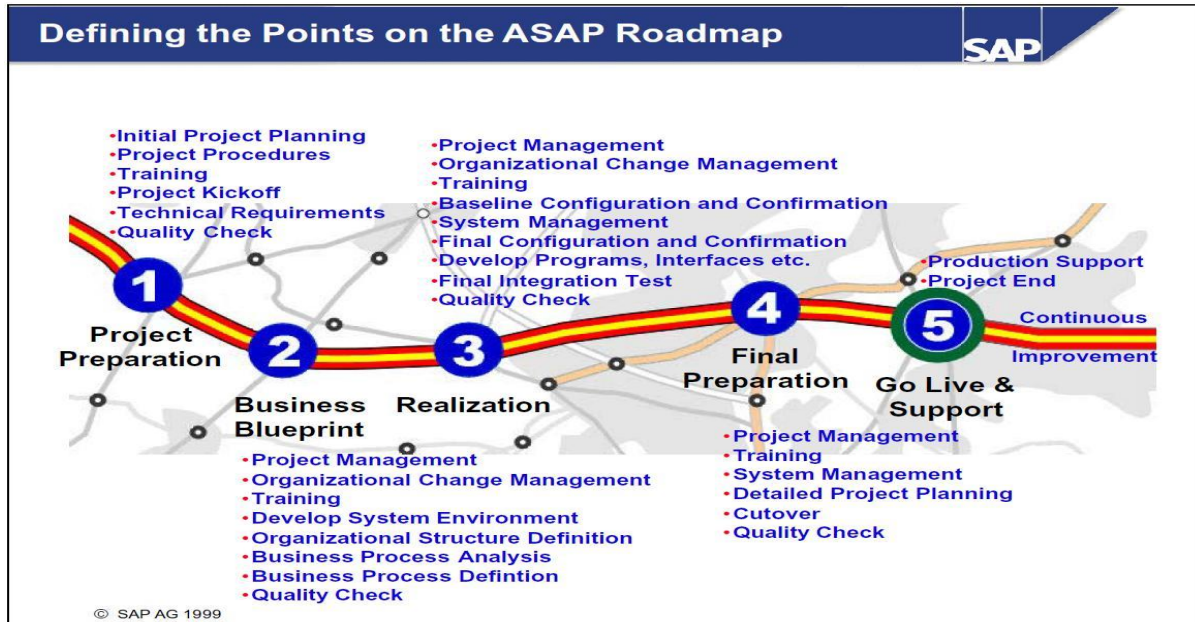


Figure 9: SAP Standard ASAP Methodology Process Map (Mygo Consulting Inc., n.d.)

- Project Preparation this is Phase 1 initiates with a retrieval of information and resources. It is an important time to assemble the necessary components for the implementation. Some important milestones that need to be accomplished for phase 1 includes:
 1. Support from Senior level authority and stakeholder
 2. Identification of clear cut project objective
 3. Solution architect for efficient decision making process.
 4. Re-engineering and user friendly support
 5. Building a qualified and capable project team
- Business Blueprint SAP has defined a business blueprint phase to help extract pertinent information about your company that is necessary for

implementation. These blueprints are in the form of questionnaires that are designed to probe for information that uncovers how your company does business. As such, they also serve to document the implementation. Each business blueprint document essentially outlines your future business processes and business requirements.

- **Realization** this is phase 3 various configurations can be done in this stage as per company requirements, implementation project team fine-tunes that system to meet all process requirements. Testing is carried out in this phase both the unit testing and integration testing is done in this phase in order to make mistake proof and also Testing is also done in the quality control server Unit testing, integration testing and day in the life testing happens at this stage

1. **Unit testing:** Core team members along with end-users will test whether the postings done in SAP is resulting as per the requirements of the organization test whether the output documents such as purchase order, invoice document are printed in the required format and showing the correct data it also has various testing process like Technical Unit testing where developments those are developed particularly like user exit, custom program, interface enhancements made are tested in this session. A successful test only proves the developed code works and that it performed the process as designed. And the next one is functional unit testing it is usually testing the

configuration that was done ,usually use actual data or data that is masked but essentially the same as a real data set. A successful test shows that the development or configuration works as designed and the data is accurate as a result.

2. **Integrating testing** it is development or configuration of any function that was developed within the process that integrated in to standard SAP system. The test conducted with a primarily purpose to examine all data involved across all modules. A successful test indicates that the processes work as designed and integrate with other functions without causing any problems in any integrated areas.
3. **Regression testing** it is kind off testing that verifies the new configuration made which may or may not impact the existing functionality and this is done on each phase of testing. So testing existing functionality to make sure that it still works as expected with the newly updated configuration. So whatever testing that is done in quality environment.
4. **SAP End to End Testing** similar to scenario testing in that a specific business case is tested from start to finish and includes running of interfaces, reports, manual inputs, workflow, etc. major purpose of this is to simulating a real world business process and in order to make it to real world scenario. It is testing based on all the master data from starting step to the last step in the flow process cycle of Procure to Pay

which in this scenario of Material Management. (Learn SAP Testing:

Create your First SAP Test Case, n.d.).

- Final Preparation Workload testing (including peak volume, daily load, and other forms of stress testing), and integration or functional testing are conducted to ensure the accuracy of your data and the stability of your SAP system. Now is an important time to perform preventative maintenance checks to ensure optimal performance at your SAP system. At the conclusion of phase 4, take time to plan and document a Go-live strategy. Preparation for Go-live means preparing for your end-users questions as they start actively working on the new SAP system.
- Go-live and support In this stage user training on the product developed and making user to understand exact functionality what development was developed and helping user to navigate through system and also any issues related to development made is addressed in this section.

Summary

In this chapter all the detailed literature was background related why this project needed and what is the purpose of initiating this project and also this chapter also explain in detail about the literature of the problem and what all tools does MygoConsulting has in order to overcome this issues and how it will be solved, also it explains in detail about the literature of the methodology, how and what methods are used to resolve this issues how standard technicality used in solving this.

Chapter III: Methodology

Introduction

This chapter gives description about the framework of the project and the design of the project. The way how the development was made and implemented in current Business SAP system is discussed in this chapter.

Design of Study

There are main two designs exists in way of approach the study and they are:

1. Waterfall Approach.
2. Agile Methodology

Waterfall Approach: The common one used here is the waterfall approach is the earliest approach used for software development. Initially, most projects followed the waterfall approach because more alteration or major changes are required in requirements.

The waterfall approach assumes that requirements are stable and frozen across the project plan. However, this is usually not true in case of large projects where requirements may evolve across the development process.

The Waterfall Model illustrates the software development process in a linear sequential flow, which means that any phase in the development process begins only if the previous phase is complete. The waterfall approach does not define the process to go back to the previous phase to handle changes in requirement. Therefore, different projects may follow different approaches to handle such situations (Melonfire, 2006).

Agile Methodology: It has sequential design process instead of incremental approach unlike waterfall method. Here things get started up with simple project plan and then work on small modules so at every end of each step project priorities are evaluated and tests are run and bugs will be identified and tested and fixed. There are many advantages related to this methodology and they are:

1. Change can be made even after the initial planning.
2. Program in this methodology can be re-written and adjusted as per the requirements.
3. It allows to make every changes necessary and add new features that matches and updates to latest developments in the industry.
4. The testing at the end of each step will ensure that bugs are identified and taken care of development cycle.
5. Product can be launched at any stage or any end of cycle.

This agile methodology can be used when:

1. Rapid production is more important along with quality.
2. Visibility for clients to monitor the scope of the project.
3. When initial picture isn't a clear picture how final product should look like.
4. When skilled labor who are adaptable and able to think differently.
5. When the product is intended for an industry with rapidly changing standards (Agile vs Waterfall – Comparing project management methods. (n.d.).

Approach followed: The methodology used in the project is SAP ASAP or Hybrid approach because of its advantages over other project implementation methodologies.

ASAP Methodology for Implementation is the SAP roadmap for the implementation of SAP solutions and supports cost effective and speedy implementation of the SAP solutions. It provides a proven, comprehensive, repeatable and rich implementation methodology to streamline projects and achieve lower total cost of implementation.

This implementation was done in the company following the below steps.

- Project Planning
- Business blue print
- Realization
- Final preparation
- Go live and support

Project planning: In this phase, requirements from client in generating the report which is user friendly concept, various brain storming sessions and workshops were conducted in the company between the technical teams and the functional teams to define an objective for this project. The objective of the project was to implement a user friendly and robust design. The project goals were defined as below:

- ✓ Should generate a user friendly report
- ✓ User should use single transaction code in order to view all the required master data fields related to the report
- ✓ This report is related to one of the SAP core supply chain management module Material Management which involve purchasing of materials and goods so a detailed purchase order history based on the goods movement type need to generate in single transaction and in single window.

Business blueprint: In this phase various workshops were conducted with users belonging to different business units to gather the requirements to convert the existing sap SQVI, SQL query reports to ABAP ALV grid report. Based on the requirements and the reporting need, technical team along with the architects designed the landscape that will be utilized for this project. SAP doesn't have any standard transaction to display PO history along with material documents. So SAP Query was developed to production to achieve all PO history details excluding material documents data.

Realization: A new ABAP custom program name Z***_PURCHASE_D*****Y was developed in which has to collect all the Purchase Order details along with material document details.

A structure Z**_PO_H**T created for ALV merge.

And finally transaction Z**_D*****Y created to run report and in technical steps drafted in order to generate this report.

1. Selection screen which is called the primary screen for user to give inputs, initializes the inputs for Purchase Order History details.
2. Inputs Validations for selection screen of Purchase order.
3. Data from various SAP Material Management tables like EKKO, EKPO, and EKET based on the selection criteria.
4. Report generated on based of SAP key movement type typically indicating the movement of goods like when inbound material which was ordered from vendor and those material received in the plant is said to have movement type number 101, it is the standard SAP numbers those were given by standard SAP system like wise other movement types used in this report are 102 is said to reversal for 101 type, 103 is goods those received when in need to check for quality is moved in to blocked stock for quality checks, 122 termed as returns to vendor.
5. ALV GRID DISPLAY to display output of PO details.
6. PF STATUS **STANDARD_FULLSCREEN** and add button **POHISTORY on ALV GRID**.
7. Capture at line selection on purchase order and when selected call transaction ME23N which display purchase order that was created.
8. Dialog screen 300 to display PO history for each line item selected.
9. Use function module ME_READ_HISTORY to get PO history details for each line item when user select line in initial grid and click in button POHISTORY.

10. Hot spot on Document and write event **on_hotspot_click** direct to particular transactions based on document type just like ME23n item history.

Go live and support: After finalizing the reporting requirements in Value realization phase, Project team from Company has started development/conversion the reports, the actual process of converting the reports will be covered in the next chapters. Once the development/conversion got completed, the reports were moved to Quality and production systems.

After the movement was done, a technical team in the company provided continuous support and fixing the bugs. (ASAP Methodology – Solution Manager – SCN Wiki, n.d.).

Data Collection

All the purchase order data related to client '*****x' and also simulation data that was created in the Mygo development system was collected in order to create a test data for the product to test. And with respect to technical current standard available SAP program that contains a report details related to purchase order history was considered to initiate the program and then further coding was developed as per business requirements.

Below is the table that showcase various standard SAP technical field names from where the data was pulled.

Table1: SAP Purchase Order Material Management Table with Technical Field Name

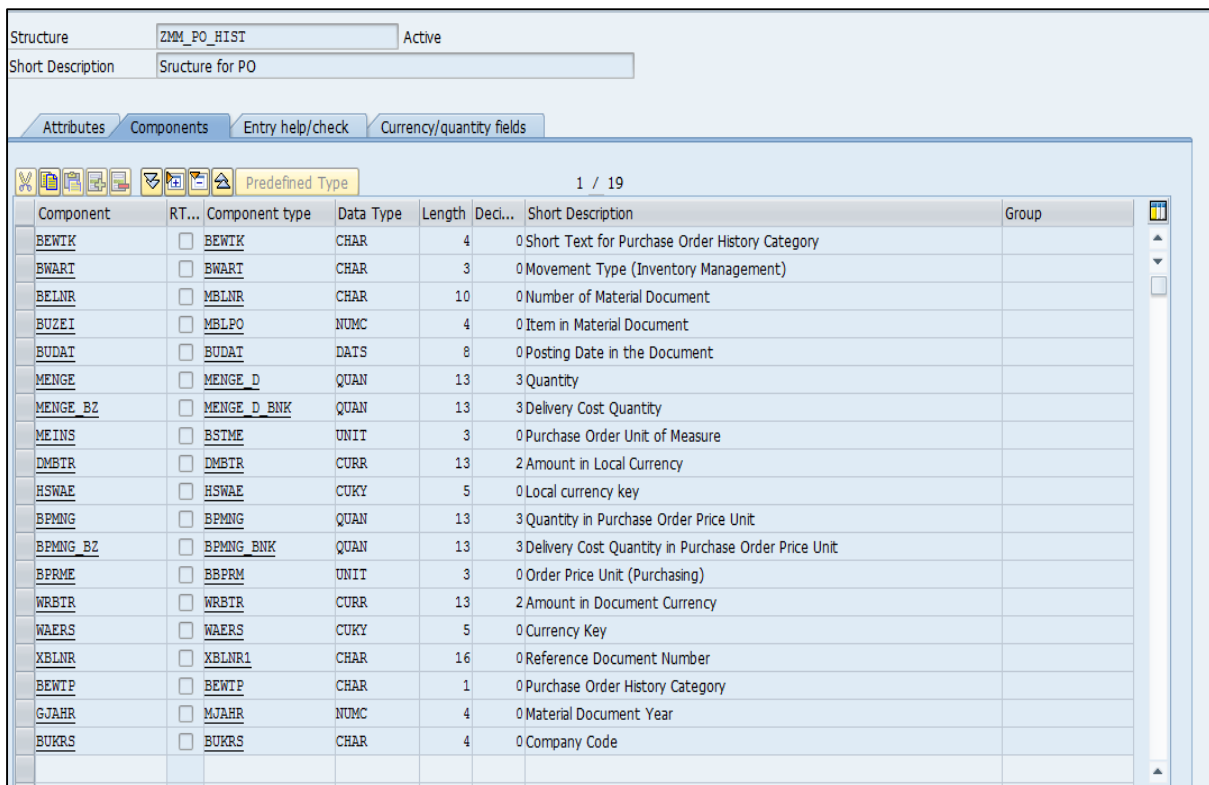
S.No	Field Name	S or P	Obligatory	Comments
1.	S_EBELN	S	NO	Purchasing Document
2	S_EINDT	S	NO	Delivery Date
3	S_MATNR	S	NO	Material
4	S_WERKS	S	NO	Plant
5	S_MATKL	S	NO	Material Group
6	S_MATNR	S	NO	Material
7	S_IHREZ	S	NO	Delivery Time
8	S_ELIKZ	S	NO	Delivery Completed
9	S_EKGRP	S	NO	Purchasing Group
10	P_VARI	P	NO	Layout

All the data that is executed in the front end was stored in the data tables in the backend, Table 1 describes each and every technical field related to current project from where the data can be pulled, accumulate and form the report as required by client. Since this report is related to Purchase Order History which involved Purchasing, delivery and material so the core table and their technical fields were displayed above.

**Table 2: SAP Technical Table Name Along with Technical Field Names
where Data is Being Pulled**

S.No	Field name	Key Field	Field Type	Field Length	Comments
	EBELN		EKKO-EBELN	4	Po Header
	EBELP		EKPO-EBELP	4	Po Item
	EINDT		EKET-EINDT	40	Delivery Date
	MENGE		EKET-MENGE	15	Schedule Qty
	WEMNG		EKET-WEMNG	10	Delivery Qty
	LOEKZ		EKPO-LOEKZ	17	Deletion Indicator in Purchasing Document
	MEINS		MEINS	4	Purchase Order Unit of Measure
	TXZ01		EKPO-TXZ01	15	Short Text
	MATKL		EKPO-MATKL	2	Material Group
	ELIKZ		EKPO-ELIKZ	3	Delivery Completed" Indicator
	IHREZ		EKKO-IHREZ	4	Delivery Time
	EKGRP		EKKO-EKGRP	10	Purchasing Group
	NAME		LFA1-NAME1	20	Vendor Name
	LIFNR		LFA1-LIFNR	16	Vendor Number
	BUDAT		EKBE-BUDAT	2	Posting Date in the Document
	BLDAT		EKBE-BLDAT	8	Document Date in Document
	CPUTM		EKBE-CPUTM	15	Time of Entry
	BWART		EKBE-BWART	15	Movement Type (Inventory Management)
	CHECK		C	8	Check Box

As explained above Table 2 is also similar to that of table 1 here it is not only limited to Material management but also extended to Warehouse and Inventory Management where the inbound deliveries and outbound deliveries can be tracked to be precise it tell at what time, what date does the goods have entered the place what is movement type where it is blocked for quality checks or shifted to unrestricted use what is unit of measure ,what is document posted data, i.e., the date where goods were received , and what is posting date the date where the goods are used and paid to vendor, etc.



The screenshot shows the SAP 'Structure' window for 'ZMM_PO_HIST'. The 'Attributes' tab is selected, displaying a table of predefined fields. The table has columns for Component, RT..., Component type, Data Type, Length, Deci..., Short Description, and Group. The 'Predefined Type' button is visible above the table. The table lists 20 fields, each with a checkbox in the 'RT...' column.

Component	RT...	Component type	Data Type	Length	Deci...	Short Description	Group
BEWIK	<input type="checkbox"/>	BEWIK	CHAR	4		0 Short Text for Purchase Order History Category	
BWART	<input type="checkbox"/>	BWART	CHAR	3		0 Movement Type (Inventory Management)	
BELNR	<input type="checkbox"/>	MBLNR	CHAR	10		0 Number of Material Document	
BUZEI	<input type="checkbox"/>	MBLPO	NUMC	4		0 Item in Material Document	
BUDAT	<input type="checkbox"/>	BUDAT	DATS	8		0 Posting Date in the Document	
MENGE	<input type="checkbox"/>	MENGE_D	QUAN	13		3 Quantity	
MENGE_BZ	<input type="checkbox"/>	MENGE_D_BNK	QUAN	13		3 Delivery Cost Quantity	
MEINS	<input type="checkbox"/>	BSME	UNIT	3		0 Purchase Order Unit of Measure	
DMBTR	<input type="checkbox"/>	DMBTR	CURR	13		2 Amount in Local Currency	
HSWAE	<input type="checkbox"/>	HSWAE	CUKY	5		0 Local currency key	
BPMNG	<input type="checkbox"/>	BPMNG	QUAN	13		3 Quantity in Purchase Order Price Unit	
BPMNG_BZ	<input type="checkbox"/>	BPMNG_BNK	QUAN	13		3 Delivery Cost Quantity in Purchase Order Price Unit	
BPRME	<input type="checkbox"/>	BBPRM	UNIT	3		0 Order Price Unit (Purchasing)	
WRBTR	<input type="checkbox"/>	WRBTR	CURR	13		2 Amount in Document Currency	
WAERS	<input type="checkbox"/>	WAERS	CUKY	5		0 Currency Key	
XBLNR	<input type="checkbox"/>	XBLNR1	CHAR	16		0 Reference Document Number	
BEWTP	<input type="checkbox"/>	BEWTP	CHAR	1		0 Purchase Order History Category	
GJAHR	<input type="checkbox"/>	MJAHR	NUMC	4		0 Material Document Year	
BUKRS	<input type="checkbox"/>	BUKRS	CHAR	4		0 Company Code	

Figure 10: SAP Screenshot that Displays Table and Field Names (Mygo Consulting Inc., n.d.)

All information related to goods / material along with the purchasing along with financial information, who is the vendor what is the price of the material in how much quantity what is the freight charges, what is the document currency what is the number range of the material etc. data was pulled from this technical table which was shown in Figure 10.

Data Analysis

To analyze the gathered data, data analysis techniques were performed below tools were required while generating the report.

1. Sap logon.
2. ABAP ALV grid
3. SE38 Transaction page where program is entered ,
4. BADI

SAP Logon: The SAP logon is a windows program used to login from Windows PC which mediates between SAP system and SAP Graphics User Interface GUI user interface this logon displays a list of available sap systems and automatically selects servers with best response times the storage of other SAP Logon configuration files like sapmsg.ini, With SAP GUI 7.20, the saplogon.ini and sapshortcut.ini files are stored in the roaming user application directory. The default of this path is the SAP\Common directory: **%APPDATA%\SAP\Common**.

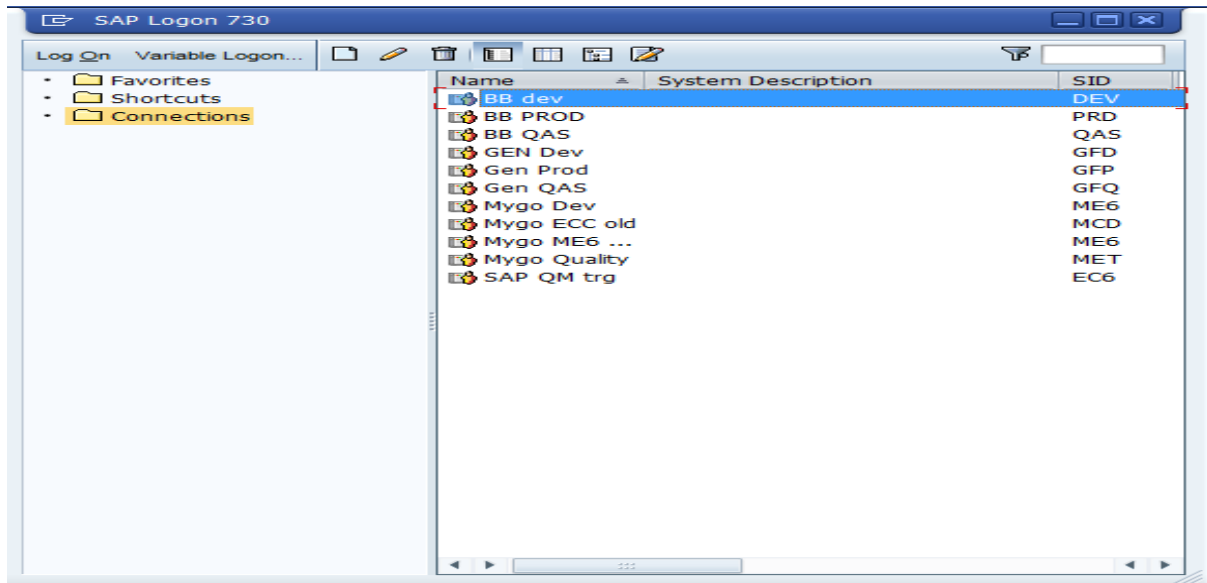


Figure 11: SAP Logon 730 (Mygo Consulting Inc., n.d.)

Figure 11 is the main SAP logon page where client details along with their server access and connection can be connected through VPN's is show in Figure 11.

ABAP ALV grid:

The screenshot shows the 'PO Delivery Report' form in the ABAP ALV List Viewer. It includes a 'User Input Selection' section with various input fields and a 'Output Specification' section.

User Input Selection			
Purchasing Document	<input type="text"/>	to	<input type="text"/>
Delivery Date	<input type="text"/>	to	<input type="text"/>
Material	<input type="text"/>	to	<input type="text"/>
Plant	<input type="text"/>	to	<input type="text"/>
Material Group	<input type="text"/>	to	<input type="text"/>
Delivery Time	<input type="text"/>	to	<input type="text"/>
Delivery Completed	<input type="text"/>	to	<input type="text"/>
Purchasing Group	<input type="text"/>	to	<input type="text"/>

Output Specification	
Layout	<input type="text"/>

Figure 12: Sample Form of ABAP ALV List Viewer (Mygo Consulting Inc., n.d.)

The other tool that is was used in displaying the Output of the report to the user, where user can enjoy playing the transaction is ABAP ALV grid.

- ABAP–Advanced Business Application Programming. It is a programming language for developing application and it first got initiated when SAP R/3 layered structure got introduced and even now in current Enterprise Central Component (ECC) server it runs on using objects like inheritance, encapsulation, polymorphism and persistence similar to Object Oriented Programming Structure called OOPS Java.
- ALV grid ABAP list viewer grid which gives a standard List format and user interface to all ABAP reports. ALV is created by a set of standard function modules provided by SAP.
- ALV provides a lot of inbuilt functions to our reports and some of the functions are listed below.
 1. Sorting of records
 2. Filtering of records
 3. Totals and Sub-totals
 4. Download the report output to Excel/HTML
 5. Changing the order of the columns in the report
 6. Hide the unwanted columns from the report (ALV Grid Control - SAP Library, n.d.).

ABAP Editor SE38 Transaction code:

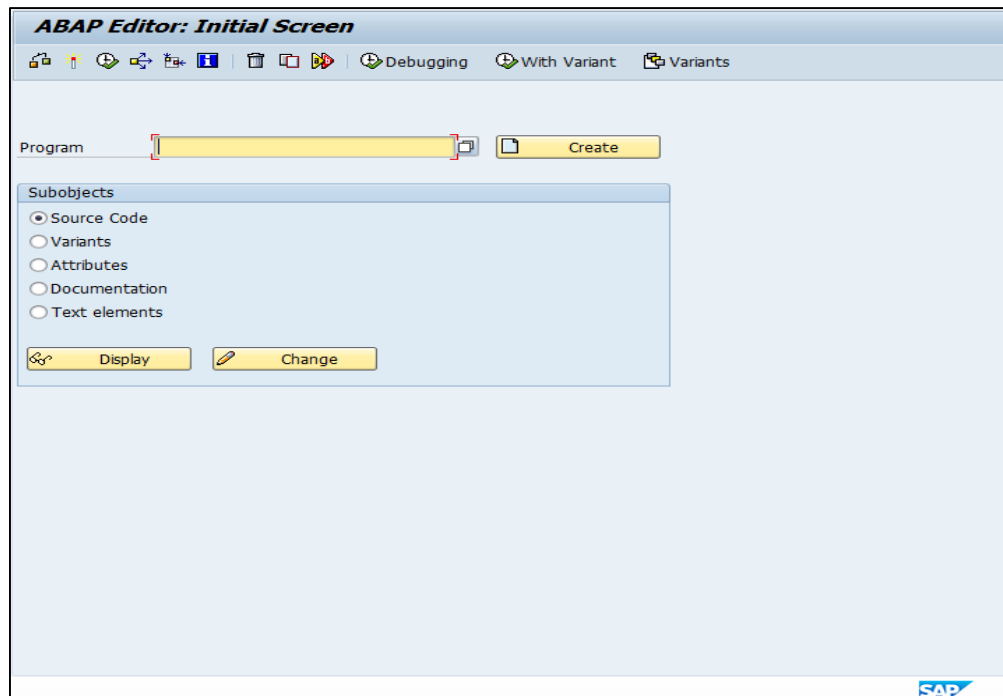


Figure 13: ABAP Editor Workbench (Mygo Consulting Inc., n.d.)

The workbench where the program is initiated, executed and tested. SE38 (ABAP Editor) is a standard SAP transaction code available within R/3 SAP systems and even with ECC systems there are thousands of transactions exits in with standard SAP systems and finding the information related to it is very tough so this page offers a place holder for information related to so that anyone having access can comment and it is very easy and search it technical ABAP workbench development ABAP editor.

Summary

This chapter covered the analysis of how data was collected methodology involved in it, what type of Design of study was used and how it was approached,

also it contains many technicality how data collected been used and it gave the completed literature overview of the procedures followed and data analyzed. The next chapter will more discussed on the data presentation and its analysis.

Chapter IV: Data Presentation and Analysis

Introduction

This chapter gives information about the actual recognition of the data on which the calculations have to be done and also give an idea about analyzing the data and preparing the data to perform the calculations on it. Questions like how the objectives of the project have been achieved will be explained in this chapter.

Data Presentation

As a part of implementation, the reports which need to be converted and developed are identified in the previous chapter. In this chapter, the data collected will be explained in detailed after the necessary data was collected using various business resources and taking various techniques for data collection into consideration. Data required for analysis in the project was also collected from excel and access. The data displayed with graphical user interface using different charts convenient for analysis.

The major functionality of the coding for making the report is showed below where major joins are made to pull the data form.

```

OPEN CURSOR WITH HOLD gv_cur FOR

SELECT a~ihrez " Delivery time
       a~ekgrp " Purchasing group
       a~ebeln " Purchasing document
       a~lifnr " Vendor number
       b~loekz " Deletion indicator
       b~meins " Order unit
       b~matnr " Material number
       b~werks " Plant
       b~txz01 " Short text
       b~matkl " Material group
       b~elikz " Delivery completion indicator
       b~ebeln " Purchasing document
       b~ebelp " Purchasing item
       c~ebeln
       c~ebelp
       c~eindt " Delivery date
       c~menge " Scheduled quantity
       c~wemng " Delivered quantity
FROM
ekko AS a INNER JOIN ekpo AS b
ON a~ebeln = b~ebeln
INNER JOIN eket AS c
ON c~ebeln = b~ebeln
AND c~ebelp = b~ebelp|
WHERE a~ebeln IN s_ebeln
      AND a~ihrez IN s_ihrez
      AND a~ekgrp IN s_ekgrp
      AND b~matnr IN s_matnr
      AND b~werks IN s_werks
      AND b~matkl IN s_matkl

```

Figure 14: Major Inner Joins that Links Various Fields from Where the Data is Interlinked

Figure14 was the code that will make all the important data fields that need to be pulled from the internal tables of standard SAP to display the required output as the businesses requirement. Once data is selected pass to final internal table and loop to have conversion exit. ALV GRID DISPLAY to display output of PO details. Below is the output display after the programming is done and it takes only 30 seconds to display the screen.
















PO Delivery Report																
<div><div></div><div>Purchase History</div></div>																
PO Number	Item	Del. Date	Sch. Quantity	Del. Quantity	UOM	Mat.No.	Plant	Item Description	Material G	Del.Ind.	Del.Time	Pur.Grp	Vendor Name	Vendor Num	Posting Date	Doc.No.
1	50	12/31/1999	999,000,000.000	67,723,919.736	FT3	327	0010	LIQUID NITROGEN	P-PURN2	X		RM	LINDE LLC	1104	03/08/1999	03/08/1
33	30	06/30/1999	8,000.000	4,904.548	TON	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA CORP	109	09/30/1999	09/30/1
33	40	06/30/1999	41,360.000	20.680	TON	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA CORP	109	01/07/2000	01/07/2
3648	10	04/27/1999	1,000,000.000	8,801.099	TON	377	0010	LIQUID NITROGEN	P-PURN2	X		RM	LINDE LLC	1104	08/13/1999	08/13/1
3648	20	04/27/1999	48,969.000	24.485	TON	377	0010	LIQUID NITROGEN	P-PURN2	X		RM	LINDE LLC	1104	01/14/2000	01/14/2
4472	100	05/28/1999	1,500.000	1.500	ROL	M-25502	0010	WIRE ELECT THHN 14GA BLUE	M-WIRE	X		MNT	WERNER ELECTRIC SUPPLY INC	961	04/03/2000	04/03/2
11644	10	06/30/2000	16,000,000.000	5,920,755.000	LB	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA CORP	109	02/02/2000	02/02/2
16953	20	06/21/2000	200.000	197.000	ROL	267	0010	WHITE THERMAL LABEL 2000/ROLL	P-LABEL	X		RM	HEARTLAND LABEL PRINTERS INC	1087	06/20/2000	06/20/2
17702	10	06/30/2000	70,000,000.000	66,055,642.190	LB	841	0010	LIQUID NITROGEN	P-PURN2	X		RM	LINDE LLC	1104	08/22/2001	08/22/2
17710	10	07/01/2000	4,000.000	3,136.318	TON	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA CORP	109	10/03/2000	10/03/2
17904	10	07/14/2000	3.000	3.000	EA	M-33827	0010	PHOTO CELL 14749	M-PHOTOEY	X		MNT	PACMAC INC	1092	07/11/2000	07/11/2
18066	40	07/12/2000	31.320	2.000	CS	396	0010	MISC-BOX TAPE 110 YD 36ROLL/CS	P-TAPE	X		RM	PACKAGING SYSTEMS OF BARABOO INC	1086	07/12/2000	07/12/2
24083	10	12/21/2000	25.000	25.000	FT	M-34654	0010	BELT, ACETAL 18"W SER 2200 FLUSH GRID	M-BELTG 1	X		MNT	INTRALOX INC	974	03/20/2001	03/20/2
24472	10	12/28/2000	11,000.000	840.086	TON	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	LINDE LLC	1104	02/23/2001	02/23/2
31217	10	07/01/2001	11,000.000	8,428.437	TON	376	0010	CO2	P-PURCO2	X		RM	LINDE LLC	1104	03/26/2002	03/26/2
44880	10	06/17/2002	4.000	4.000	EA	M-24410	0010	DOOR PULL 16" X 4"	M-DOORPUL	X		MNT	BLOCK IRON & SUPPLY INC	1008	10/02/2002	10/02/2
45231	20	06/26/2002	1,000.000	1,000.000	FT	M-25516	0010	WIRE ELECT 16/4 SO YELLOW	M-WIRE	X		MNT	CRESCENT ELECTRIC CORP	2418	06/20/2002	06/20/2
46223	10	07/01/2002	4.000	4.000	EA		0010	SIGN MATERIAL WHITE W/BLUE LETTER (MSHOP	RP-MABNT	X		MNT	JOHNSON PLASTICS INC	990	07/19/2002	07/19/2
48950	10	09/17/2002	2,050.000	2,050.000	LB	1054	0010	CARRAGEENAN SKIDMORE	P-BNGRONT	X		RM	SKIDMORE SALES&DISTRIBUTING CO INC	219	09/25/2002	09/25/2
51661	10	12/04/2002	40,000.000	40,000.000	LB	237	0010	PURC DESIGNED BRST MT W/SKIN	P-MEAT	X	2 PM	RM	BLUE RIBBON COMMODITIES TN INC	2561	01/29/2003	01/29/2
51671	10	12/05/2002	40,000.000	40,000.000	LB	237	0010	PURC DESIGNED BRST MT W/SKIN	P-MEAT	X	2 PM	RM	BLUE RIBBON COMMODITIES TN INC	2561	12/05/2002	12/05/2
51696	90	11/20/2002	1,500.000	1,402.000	EA	1000421	0010	RETAIL BOX GOLD/NPLUMP CHIKN'RIB	P-BOX	X		RM	PACKAGING SYSTEMS OF BARABOO INC	1086	11/20/2002	11/20/2
52772	60	12/18/2002	500.000	0.000	EA	1000421	0010	RETAIL BOX GOLD/NPLUMP CHIKN'RIB	P-BOX	X		RM	PACKAGING SYSTEMS OF BARABOO INC	1086	12/18/2002	12/18/2
53026	10	01/03/2003	17.000	17.000	EA	M-26108	0010	MALE PIPE SWIVEL 1IN TUBE 1ID	M-FITTG H	X		MNT	FERGUSON ENTERPRISES INC	962	12/30/2002	12/30/2
53663	80	01/13/2003	2,000.000	0.000	EA	1000421	0010	RETAIL BOX GOLD/NPLUMP CHIKN'RIB	P-BOX	X		RM	PACKAGING SYSTEMS OF BARABOO INC	1086	01/13/2003	01/13/2
54916	10	02/17/2003	20.000	20.000	EA	M-35428	0010	FUSE, FNQR30 FERRAZ	M-FUSE	X		MNT	CRESCENT ELECTRIC CORP	2418	05/02/2003	05/02/2
58875	20	05/22/2003	2.000	2.000	EA	M-34419	0010	HYD. BASE FOR NACHI VALVE ADO3SP6P	M-VALVE H	X		MNT	PRICE ENGINEERING CO INC	970	10/19/2004	10/19/2
58879	10	05/22/2003	24.000	24.000	EA	M-21648	0010	WHEELS 5 INCH	M-WHEEL	X		MNT	CASTERS & MATERIAL HANDLING INC	3861	05/15/2003	05/15/2
59276	10	06/10/2003	160.000	144.000	BAG	357	0010	ENHANCED FORMED BREADING G0327 KERRY	P-BREADING	X		RM	KERRY INGREDIENTS & FLAVOURS	73	07/12/2003	07/12/2
60287	50	06/23/2003	80.000	74.000	BAG	454	0010	CHICKEN FRIED CHICKEN BATTER G0704 KERRY	P-BREADING	X		RM	KERRY INGREDIENTS & FLAVOURS	73	06/23/2003	06/23/2
60631	10	07/26/2003	4,200.000	3,137.370	TON	377	0010	LIQUID NITROGEN	P-PURN2	X		RM	LINDE LLC	1104	07/18/2003	07/18/2
60631	20	07/26/2003	1,725.000	1,139.762	TON	841	0010	LIQUID NITROGEN	P-PURN2	X		RM	LINDE LLC	1104	07/17/2003	07/17/2

Figure 15: Output Display Screen (Mygo Consulting Inc., n.d.)

Detailed explanation of the output screen is shown in Figure 15.

PO number: Purchase Order number, i.e., it takes the predefined number range that is internally assigned by the system and its technical term is 'EBELN'.

Delivery date: The date where exactly when the vendor needs to deliver the product as the agreement made during the Quotation level. And its technical term is 'EINDT'

Scheduled quantity: The number of items that need to be scheduled for delivery and its technical term is 'MENGE' and data pulled from EKET Scheduled agreements scheduled lines table.

Delivered Quantity: The number of items that are delivered and is compared to the actual quantity ordered and its technical term is 'WEMNG' and the table is EKET from where the data was pulled.

UOM: Unit of measure nothing but the how the unit is measure like it could be in pounds Kilograms, Grams, Each piece etc. Table name T0006 and technical term MSEHT.

Material number: Number uniquely identifying a material master record for a material and its technical name is 'MBLNR' and its table name is 'MKPF'.

Delivery completion indicator: "Delivery completed" indicator specifies whether a purchase order item is considered closed which means that no more goods receipts for this item. If the delivery completed indicator is set, the open purchase order quantity becomes zero, even if the full quantity has not been delivered. It is still possible to post goods receipts of remaining quantities, but these no longer change the open purchase order quantity and its technical name is ELIKZ and it is pulled from table EKPO which has every detail regarding the Purchasing Document Item level and it is denoted by letter 'X'

Vendor name and vendor number: Person who delivers the product to the company its technical name is LIFNR from LFA1 table.

Posting data of the document: Date on which the actual goods are received in the plant when goods receipt is done its technical field name is 'BUDAT' and it is pulled from data 'EKBE'.

Document date: Date on which the Purchase Order document is first created
its technical name is 'BLDAT' and from table 'EKBE'.

Important tables in table form:

EKKO Table Purchasing Document Header

Table 3: Purchasing Document Header Level Data

Field Name	Field Description
EBELN	Purchasing Document Number
BURKS	Company code
BSART	Purchasing Document type
EKORG	Purchasing Organization
EKGRP	Purchasing Group
KUNNR	Customer Number

Table 3 is header level data where legal information related to purchasing will be stored in standard sap tables like company which company was purchasing , who is responsible for purchasing via, purchasing organization , what is legal purchasing document type used, etc.

EKPO Purchasing Document Item Level

Table 4: Purchasing Document Item Level Table

Field Name	Field Description
ELIKZ	Delivery Completion Indicator
WEPOS	Goods Receipt
REPOS	Invoice Receipt
TXZ01	Short Text
MATKL	Material Group
MTART	Material Type

Table 4 is related to item level which means what material need to be procured and of what material type or material group companies does classify for example iPhone in electronics , Lenovo Yoga in Laptops session, etc.

Features of the product:

1. Can navigate to multiple transactions in single window.

PO Delivery Report													
Purchase History													
PO Number	Item	Del. Date	Sch. Quantity	Del. Quantity	UOM	Mat.No.	Plant	Item Description	Material G	Del.Ind.	Del.Time	Pur.Grp	Vendor Name
1	50	12/31/1999	999,000,000.000	67,723,919.736	FT3	327	0010	LIQUID NITROGEN	P-PUR12	X		RM	LINDE LLC
33	30	06/30/1999	8,000.000	4,904.548	TON	326	0010	CO2 A.D.M	P-PURCO2	X		RM	AIR LIQUIDE AMERICA CORP
33	40	06/30/1999	41,560.000	20,680	TON	326	0010	CO2 A.D.M	P-PURCO2	X		RM	AIR LIQUIDE AMERICA CORP
3648	10	04/27/1999	1,000,000.000	8,861.099	TON	327	0010	LIQUID NITROGEN	P-PUR12	X		RM	LINDE LLC
3648	20	04/27/1999	48,969.000	24.485	TON	327	0010	LIQUID NITROGEN	P-PUR12	X		RM	LINDE LLC
4472	100	05/28/1999	1,500.000	1.500	ROL	M-25502	0010	WIRE ELECT THIN 14GA BLUE	M-WIRE	X		MNT	VERNER ELECTRIC SUPPLY INC
11644	10	06/30/2000	16,000,000.000	5,920,755.000	LB	375	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA CORP
16953	20	06/21/2000	200.000	197.000	ROL	267	0010	WHITE THERMAL LABEL 2000/ROLL	P-LABEL	X		RM	HEARTLAND LABEL PRINTERS INC
17702	10	06/30/2000	70,000,000.000	66,055,642.190	LB	841	0010	LIQUID NITROGEN	P-PUR12	X		RM	LINDE LLC
17710	10	07/01/2000	4,000.000	3,136.318	TON	326	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA CORP
17904	10	07/14/2000	3.000	3.000	EA	M-33872	0010	PHOTO CELL 14749	M-PHOTOEY	X		MNT	PACHAC INC
18066	40	07/12/2000	31.320	2.000	CS	396	0010	MISC-BOX TAPE 110 YD 36ROLL/CS	P-TAPE	X		RM	PACKAGING SYSTEMS OF BARABOO INC
24083	10	12/21/2000	25.900	25.000	FT	M-34604	0010	BELT, ACETAL 18"W SER 2200 FLUSH GRID	M-BELT 1	X		MNT	INTRALOX INC
24472	10	12/28/2000	11,000.000	840.086	TON	326	0010	CO2 A.D.M.	P-PURCO2	X		RM	LINDE LLC
31217	10	07/01/2001	11,000.000	8,428.437	TON	326	0010	CO2	P-PURCO2	X		RM	LINDE LLC
44880	10	06/17/2002	4.000	4.000	EA	M-24410	0010	DOOR PULL 16" X 4"	M-DOORPUL	X		MNT	BLOCK IRON & SUPPLY INC
45331	20	06/26/2002	1,000.000	1,000.000	FT	M-25516	0010	WIRE ELECT 16/4 SO YELLOW	M-WIRE	X		MNT	CRESCENT ELECTRIC CORP
46272	10	07/01/2002	4.000	4.000	EA		0010	SIGN MATERIAL WHITE W/BUE LETTER (MSHOP	RP-MAINT	X		MNT	JOHNSON PLASTICS INC
48950	10	09/17/2002	2,050.000	2,050.000	LB	1054	0010	CARRAGEENAN SKIDMORE	P-BIGDRONT	X		RM	SKIDMORE SALES&DISTRIBUTING CO INC
51661	10	12/04/2002	40,000.000	40,000.000	LB	237	0010	PURC DESIGNED BRST MT W/SKIN	P-MEAT	X	2 PM	RM	BLUE RIBBON COMMODITIES TN INC
51671	10	12/05/2002	40,000.000	40,000.000	LB	237	0010	PURC DESIGNED BRST MT W/SKIN	P-MEAT	X	2 PM	RM	BLUE RIBBON COMMODITIES TN INC
51696	90	11/20/2002	1,500.000	1,402.000	EA	1000421	0010	RETAIL BOX GOLD/YPLUMP CHKN/RIB	P-BOX	X		RM	PACKAGING SYSTEMS OF BARABOO INC
52722	60	12/18/2002	500.000	0.000	EA	1000421	0010	RETAIL BOX GOLD/YPLUMP CHKN/RIB	P-BOX	X		RM	PACKAGING SYSTEMS OF BARABOO INC
53026	10	01/03/2003	17.000	17.000	EA	M-26108	0010	MALE PIPE SWIVEL 1/8" TUBE 1D	M-FITTING H	X		MNT	FERGUSON ENTERPRISES INC
53663	80	01/13/2003	2,000.000	0.000	EA	1000421	0010	RETAIL BOX GOLD/YPLUMP CHKN/RIB	P-BOX	X		RM	PACKAGING SYSTEMS OF BARABOO INC
54916	10	02/17/2003	20.000	20.000	EA	M-35428	0010	FUSE, FNQ30 FERRAZ	M-FUSE	X		MNT	CRESCENT ELECTRIC CORP
58875	20	05/22/2003	2.000	2.000	EA	M-34419	0010	HYD. BASE FOR NACHI VALVE AD03SP56P	M-VALVE H	X		MNT	PRICE ENGINEERING CO INC
58879	10	05/22/2003	24.000	24.000	EA	M-21648	0010	WHEELS 5 INCH	M-WHEEL	X		MNT	CASTERS & MATERIAL HANDLING INC
59776	10	06/10/2003	160.000	144.000	BAG	357	0010	ENHANCED FORMED BREADING G0327 KERRY	P-BREADING	X		RM	KERRY INGREDIENTS & FLAVOURS

Figure 16: Output Screen Purchase Order History Display (Mygo Consulting Inc., n.d.)

In the Figure 16 purchase order number 17710 was ticked to see the purchase order history where another SAP standard transaction ME23n needs to be called to view the purchase order history but the POP up window in the program created will display the purchase order history in the same window.

Item	Del. Date	Sch. Quantity	Del. Quantity	UOM	Mat.No.	Plant	Item Description	Material G	Del.Ind.	Del.Time	Pur.Grp	Vendor Name
1	50 12/31/1999	999,000,000.000	67,723,919.736	FT3	377	0010	LIQUID NITROGEN	P-PURIN2	X		RM	LINDE LLC
33	30 06/30/1999	8,000.000	4,904.548	TON	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA
33	40 06/30/1999	41,360.000	20.680	TON	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA
3648	10 04/27/1999	1,000,000.000	8,801.099	TON	377	0010	LIQUID NITROGEN	P-PURIN2	X		RM	LINDE LLC
3648	20 04/27/1999	48,969.000	24.485	TON	377	0010	LIQUID NITROGEN	P-PURIN2	X		RM	LINDE LLC
4472	100 05/28/1999	1,500.000	1.500	ROL	M-25502	0010	WIRE ELECT THHN 14GA BLUE	M-WIRE	X		MNT	WERNER ELECTRIC SU
11644	10 06/30/2000	16,000,000.000	5,920,755.000	LB	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA
16953	20 06/21/2000	200.000	19									
17707	10 06/30/2000	70,000,000.000	66,055,64									
17710	10 07/01/2000	4,000.000	3,13									
17904	10 07/14/2000	3.000										
18066	40 07/12/2000	31.320										
24083	10 12/21/2000	25.000	2									
24477	10 12/28/2000	11,000.000	84									
31217	10 07/01/2001	11,000.000	8,42									
44880	10 06/17/2002	4.000										
45231	20 06/26/2002	1,000.000	1,00									
46273	10 07/01/2002	4.000										
48950	10 09/17/2002	2,050.000	2,05									
51661	10 12/04/2002	40,000.000	40,00									
51671	10 12/05/2002	40,000.000	40,00									
51696	90 11/20/2002	1,500.000	1,40									
52772	60 12/18/2002	500.000										
53026	10 01/03/2003	17.000	17.000	EA	M-26108	0010	MALE PIPE SWIVEL 1IN TUBE 1ID	M-FITTG H	X		MNT	FERGUSON ENTERPRIS
53662	80 01/12/2003	2,000.000	0.000	EA	1000431	0010	RETAIL BOX GOLD/RED/BLUE CUB/UBR	P-BOX	X		RM	PACKAGING SYSTEMS

Sh...	M...	Mat. Doc.	Item	Posting Date	Quantity	Delivery cost qty	O...	Amount in LC	L.cur	Qty
GR	101	5000007222	1	07/03/2000	21.040	0.000	T...	1,472.80	USD	
GR	101	5000007257	1	07/05/2000	10.600	0.000	T...	742.00	USD	
GR	101	5000007258	1	07/05/2000	4.110	0.000	T...	287.70	USD	
GR	101	5000007434	1	07/10/2000	6.525	0.000	T...	456.75	USD	
GR	101	5000007505	1	07/11/2000	21.770	0.000	T...	1,523.90	USD	
GR	101	5000007550	1	07/12/2000	19.570	0.000	T...	1,369.90	USD	
GR	101	5000007551	1	07/12/2000	21.050	0.000	T...	1,473.50	USD	
GR	101	5000007621	1	07/13/2000	19.000	0.000	T...	1,330.00	USD	
GR	101	5000007622	1	07/13/2000	20.090	0.000	T...	1,406.30	USD	
GR	101	5000007772	1	07/17/2000	21.460	0.000	T...	1,502.20	USD	

PO Number	Item	Del. Date	Sch. Quantity	Del. Quantity	UOM	Mat.No.	Plant	Item Description	Material G	Del.Ind.	Del.Time	Pur.Grp	Vendor Name
1	50	12/31/1999	999,000,000.000	67,723,919.736	FT3	377	0010	LIQUID NITROGEN	P-PURIN2	X		RM	LINDE LLC
33	30	06/30/1999	8,000.000	4,904.548	TON	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA
33	40	06/30/1999	41,360.000	20.680	TON	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA
3648	10	04/27/1999	1,000,000.000	8,801.099	TON	377	0010	LIQUID NITROGEN	P-PURIN2	X		RM	LINDE LLC
3648	20	04/27/1999	48,969.000	24.485	TON	377	0010	LIQUID NITROGEN	P-PURIN2	X		RM	LINDE LLC
4472	100	05/28/1999	1,500.000	1.500	ROL	M-25502	0010	WIRE ELECT THHN 14GA BLUE	M-WIRE	X		MNT	WERNER ELECTRIC SU
11644	10	06/30/2000	16,000,000.000	5,920,755.000	LB	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA
16953	20	06/21/2000	200.000	19									
17707	10	06/30/2000	70,000,000.000	66,055,64									
17710	10	07/01/2000	4,000.000	3,13									
17904	10	07/14/2000	3.000										
18066	40	07/12/2000	31.320										
24083	10	12/21/2000	25.000	2									
24477	10	12/28/2000	11,000.000	84									
31217	10	07/01/2001	11,000.000	8,42									
44880	10	06/17/2002	4.000										
45231	20	06/26/2002	1,000.000	1,00									
46273	10	07/01/2002	4.000										
48950	10	09/17/2002	2,050.000	2,05									
51661	10	12/04/2002	40,000.000	40,00									
51671	10	12/05/2002	40,000.000	40,00									
51696	90	11/20/2002	1,500.000	1,40									
52772	60	12/18/2002	500.000										
53026	10	01/03/2003	17.000	17.000	EA	M-26108	0010	MALE PIPE SWIVEL 1IN TUBE 1ID	M-FITTG H	X		MNT	FERGUSON ENTERPRIS
53662	80	01/12/2003	2,000.000	0.000	EA	1000431	0010	RETAIL BOX GOLD/RED/BLUE CUB/UBR	P-BOX	X		RM	PACKAGING SYSTEMS

Sh...	M...	Mat. Doc.	Item	Posting Date	Quantity	Delivery cost qty	O...	Amount in LC	L.cur	Qty
GR	101	5000022718	1	06/27/2001	21.280	0.000	T...	1,617.28	USD	
GR	101	5000022719	1	06/27/2001	21.420	0.000	T...	1,627.92	USD	
GR	101	5000022830	1	06/29/2001	21.130	0.000	T...	1,605.88	USD	
GR	101	5000022892	1	06/30/2001	21.170	0.000	T...	1,608.92	USD	
PO History Category E					3,136.318		T...	230,763.10	USD	3,1
Ac...	48000540	19	11/17/2000		20.090	0.000	T...	0.00	USD	
PO History Category K					20.090		T...	0.00	USD	
IR	51024242	2	07/10/2000		21.040	0.000	T...	1,549.88	USD	
IR	51024341	2	07/11/2000		10.600	0.000	T...	763.20	USD	
IR	51024342	2	07/11/2000		4.110	0.000	T...	295.92	USD	

Figure 17: Display of the Purchase Order History in Popup Window (Mygo Consulting Inc., n.d.)

Figure 17 illustrates the testing screens those were seen during the testing phases of the product developed. When Purchase Order number 17710 was clicked

it will display the complete information related to it and in depth Purchase order history will display without going to that transaction code given by Sap it displays in that single window so one can compare and cross check the data without using another transaction.

Validation of values with Standard SAP code: Here the values those were displaying was validated with the respect to the standard SAP purchase order transaction ME23N.

The image displays two screenshots of the SAP Standard PO 17710 interface, created by GCSPATH. The top screenshot shows the 'Item' tab for material 376, CO2 A.D.M., with a total quantity of 4,000.000 TON. The bottom screenshot shows the 'Purchase Order History' tab for the same item, listing various purchase orders and their quantities.

S...	M...	Material D...	Item	Posting Date	Quantity	Delivery cost quant...	O...	Amount in LC	Lcur	Qty in OPUn	DelCostQty (OPUn)	O...
GR	101	5000002505	1	07/11/2000	21.770	0.000	T...	1,523.90	USD	21.770	0.000	T...
GR	101	5000002434	1	07/10/2000	6.525	0.000	T...	456.75	USD	6.525	0.000	T...
GR	101	5000002258	1	07/05/2000	4.110	0.000	T...	287.70	USD	4.110	0.000	T...
GR	101	5000002252	1	07/05/2000	10.600	0.000	T...	742.00	USD	10.600	0.000	T...
GR	101	5000002222	1	07/03/2000	21.040	0.000	T...	1,472.80	USD	21.040	0.000	T...
Tr./Ev. Goods receipt					3,136.318		T...	230,763.10	USD	3,136.318	T...	
Ac...	48000540	19	11/17/2000	20.090	0.000	T...	0.00	USD	20.090	0.000	T...	
Tr./Ev. Account maintenance					20.090		T...	0.00	USD	20.090	T...	
IR	51043216	2	07/05/2001	21.280	0.000	T...	1,843.80	USD	21.280	0.000	T...	
IR	51043215	2	07/05/2001	21.420	0.000	T...	1,855.70	USD	21.420	0.000	T...	
IR	51043204	2	07/08/2001	31.120	0.000	T...	1,834.45	USD	31.120	0.000	T...	
Tr./Ev. Invoice receipt					3,116.228		T...	240,667.51	USD	3,116.228	T...	

Figure18: Validation of Purchase Order (Mygo Consulting Inc., n.d.)

Figure 18 is validating screen that is verifying whether the data pulled is correctly pulled and matched according the existing sap data.

Data Analysis

The major technique that was used here in taking the purchase order history data to generate the report is BADI a standard SAP oriented enhancement technique.

BADI – Business Add Ins.

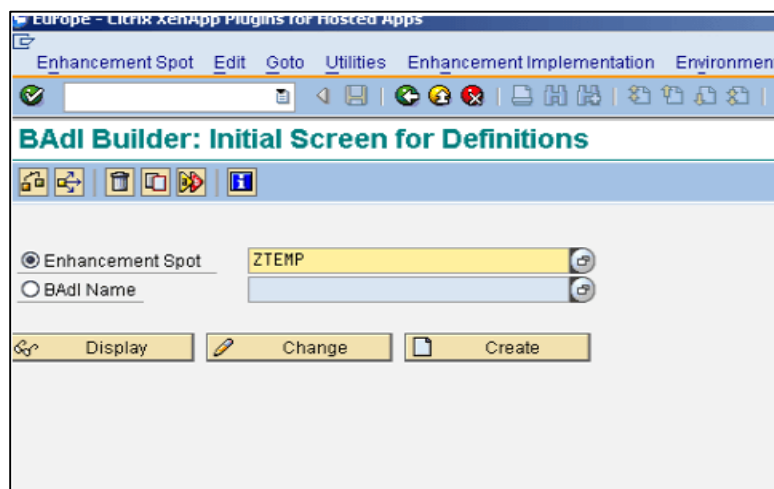


Figure 19: Business Add IN Builder Standard SAP (Mygo Consulting Inc., n.d.)

BADI is a new technique in SAP programming language as it was built and follows Object Oriented technique so that it can be reusable. A BADI that is implemented can be used any number of times where as normal standard technique can be used only once. BADI can be used to any custom reports or custom projects. Transaction code SE18 is used to create BADI, here a class interface will be automatically created and once it gets activated used SE19 transaction code implementation of methods can be done. An interface with 'IF_EX_' inserted between

the first and second characters of the BADI name. An adapter class with 'CL_EX_' inserted between the first and second characters of the BADI name these two functions are generated when BADI is created.

Program Technique followed:

The BADI name to add the custom screen to ME23n is 'ME_GUI_PO_***T'.

1. Go to T-code SE19 and create an implementation Z**_GUI_PO_***T and then click on create button
2. Give the Definition name "ME_GUI_PO_***T" and continue, give short text, save
3. Click on Interface Tab, you can find the implementation class name as Z**_IM_ME_GUI_PO_***2. \
4. Click on Z**_IM_ME_GUI_PO_CUST2, which will take you to SE24.
5. Add "M**D" in the Type Group Section of properties tab.
6. Go to Attributes section and declare the following attribute
7. SUBSCREEN1 Constant Public Type MEPO_NAME Name of a View 'ITEMSCREEN1 '.
8. Go to Methods section, you can find the BADI interface methods.
9. Double click on the method "IF_EX_ME_GUI_PO_***T~SUBSCRIBE", this method is having 3 parameters |

Figure 20: BADI Technique Implementation in Current Program

Figure 20 illustrates the flow and step by step algorithm code that was used in order to develop the custom report. The one which start with Z are custom developed codes and these code are concatenated to the standard sap with the use of enhancements point in the standard sap program via User exits or Customer Exits or Business Ad-Ins called BAPi.

Summary

In this chapter it describes about the technics used to generate the report and how the data was handled. Also, describes about the coding and latest techniques used in that to implement the latest technology in the programming language (here Object Oriented concepts used) .It shows showcase the output report in the form of figures with detailed explanation of each and every SAP terminology explaining. It also explain different table names and technical names those are involved to pull the data and loop them and link together to get the desired output.

Project timeline.

S.NO	Project Details	Completion Date	Status
1.	Identification of the loopholes in the standard SAP system	March 2015	✓
2.	Data collection of High frequency and repeated requirements of the companies from previous tickets	March-April 2015	✓
3.	Coding work Technical documentations	April 2015	✓
4.	Development of the Coding	April-May 2015	✓
5.	Testing of the code work	May-June 2015	✓
6.	Complete designing the ALV	June 2015	✓
7.	Testing the custom Product Functionality	August 2015	✓
8.	Transportation from Dev system to Quality	August 2015	✓
9.	Transporting to Client Development System	September- 2015	✓
11.	Testing Client System and End User training	September- 2015	✓
12.	Project Defense	October 2015	✓

Chapter V: Results, Conclusion, and Recommendations

Introduction

This chapter explains the ability to utilize data, and react quickly to what the data tells us, is necessary to compete. This is done by making use of numerous techniques of exploration which is already discussed in the preceding chapters. To complete the development of analysis successfully, the necessary information was gathered from dashboards, scoreboards, annual status reports. With this analysis of the data, this development would come out with a conclusion.

Results

The project questions which were posed at the start of the project study are discussed below.

1. Is this user friendly project implemented at any client system?

After the project was implemented, at two major clients around Midwest region the product developed was successfully tested at client system and now it was moved to production system for solving the purpose in real time scenario.

2. Approximately how many transactional steps or process steps were minimized?

Previously 7-8 transactional steps were needed in order to match the developed report with real time scenarios now it been reduced to 1 transactional step which provides popup boxes along with the necessary information.

3. What 5S lean techniques were used in this report?

Sorting, i.e., replacing the current legacy code with the newly developed code and Strengthening i.e. making necessary correction and enhancing the code that was developed so these are the two lean 5S techniques were used.

4. How much performance time got reduced while running the report in a widespread?

Finally, performance time for executing the report was reduced from 2-3 minutes to 30 seconds for section criteria of 10 purchase orders chosen.

Conclusion

Change was seen all around us currently each and every company adopting lean techniques and agile methods in order to cut more on investment and in turn get more profitability everyone needs to get updated in order run successful in this current competitive world. As more and more technologies come in, one need to get switched and adopted to the latest trend to sustain. All the MyGo Products are currently developed with lean techniques, and user friendly. Also the performance of wide run opening of the report has drastically reduced from few minutes to 30 seconds. The centralized reporting solution also reduces the overhead on each individual department to create reports on demand.

Here in this case, Standard SQVI select query reports were now generated in to Object Oriented user friendly report. The new report generated are mostly enterprise wide reporting, which provides an Adobe PDF (If installed printer friendly

and pixel perfect reporting. Now user can use only one transaction code 'Z**D' in order to look or the Purchase Order history and plan the procurement accordingly so with the use MYPTP manager a custom user friendly report was generated and it is currently implemented successfully at one of the client place where Mygo Consulting its current support partner.

Pictorial way of demonstrating the Results those were achieved using various screenshots.

Differences between the old SAP standard report and current development.

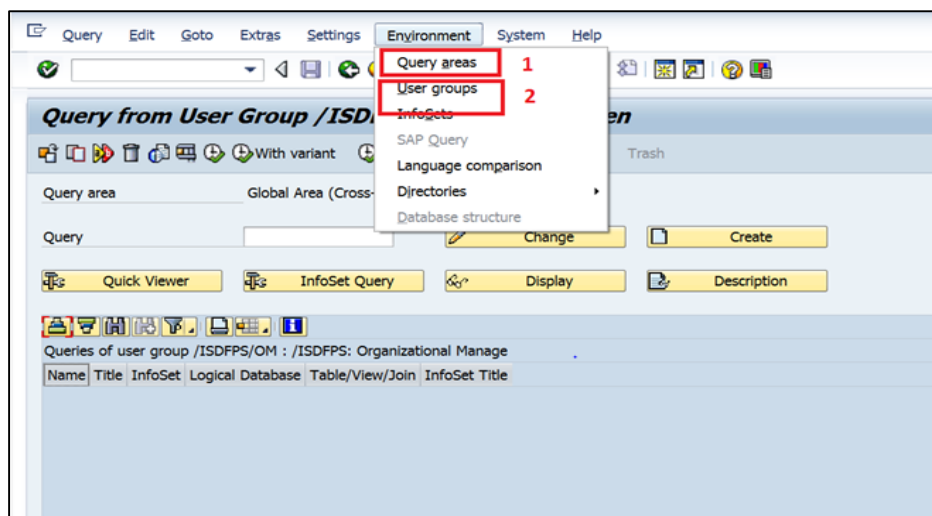


Figure 21: SAP SQL Query Report Initial Login (Mygo Consulting Inc., n.d.)

It is the Selection query SQL based report to run the order version to track the purchase order history Figure 21 displays that.

Purchasing Delivery Report

Report-specific selections

Material Group	<input type="text"/>	to	<input type="text"/>	
Purchasing Group	<input type="text"/>	to	<input type="text"/>	
Purchasing Document Number	<input type="text"/>	to	<input type="text"/>	
Item Delivery Date	<input type="text"/>	to	<input type="text"/>	
Material Number	<input type="text"/>	to	<input type="text"/>	
Plant	0030	to	<input type="text"/>	
Delivery Time	<input type="text"/>	to	<input type="text"/>	
"Delivery Completed" Indicat	<input checked="" type="checkbox"/>	to	<input type="text"/>	

Output specification

Layout

Figure 22: Old Report Selection Screen (Mygo Consulting Inc., n.d.)

Figure 22 was the selection screen to generate the report in the wide run using various parameters like Material Group, Material Number, Plant, Delivery Completion Indicator- an indicator that was checked to see whether complete delivery has been made.

Purchasing Delivery Report

Purchasing Delivery Report

Purch.Doc.	Item	Deliv. Date	Scheduled Qty	UoM	Qty D...	OUn	Material	Plant	Short Text	Del. Time	Name 1	Requ...	Matl Group	PGr
228767	00020	07/08/2015	2,500	EA	0	EA	R7848	0010	Plain Brown Box 20x14x10.5		GREEN BAY PACKAGING INC		P-BOX	RM
229218	00010	07/07/2015	50	BAG	0	BAG	391	0010	PROTEIN TECH PRPLS 500 F VPP 44# BAG		SKIDMORE SALES&DISTRIBUTING CO INC		P-INGRDNT	RM
229218	00020	07/07/2015	50	BAG	0	BAG	391	0010	PROTEIN TECH PRPLS 500 F VPP 44# BAG		SKIDMORE SALES&DISTRIBUTING CO INC		P-INGRDNT	RM
229218	00030	07/07/2015	50	BAG	0	BAG	392	0010	PROTN TECH SUPRO PROTEIN 516 44# BA		SKIDMORE SALES&DISTRIBUTING CO INC		P-INGRDNT	RM
229218	00040	07/07/2015	50	BAG	0	BAG	392	0010	PROTN TECH SUPRO PROTEIN 516 44# BA		SKIDMORE SALES&DISTRIBUTING CO INC		P-INGRDNT	RM
228798	00020	07/11/2015	1	EA	0	EA	M-43219	0010	TOUCHPANEL 3" MONOCHROME 2711C-T3		MAREL MEAT PROCESSING INC		M-CONTROL	MNT
229221	00010	07/13/2015	6	EA	2	EA	M-32832	0010	MUFFLER 405815-004		RE LEWIS REFRIGERATION INC		M-MUFFLER	MNT
229221	00020	07/13/2015	8	EA	2	EA	M-37863	0010	MUFFLER, DEPRESS SULLAIR 02250138-852		RE LEWIS REFRIGERATION INC		M-MUFFLER	MNT
229221	00030	07/13/2015	5	EA	1	EA	M-39769	0010	FILTER, SULLAIR (02250155-709)		RE LEWIS REFRIGERATION INC		M-FILTER	MNT
229219	00010	07/07/2015	6	ROL	0	ROL	R7620	0010	POLY-FILM/PAC MAC 114#/R 2MIL		PACKAGING SYSTEM OF IN CORP		P-BAG	RM
229219	00020	07/07/2015	6	ROL	0	ROL	R7620	0010	POLY-FILM/PAC MAC 114#/R 2MIL		PACKAGING SYSTEM OF IN CORP		P-BAG	RM
229219	00030	07/07/2015	6	ROL	0	ROL	R7620	0010	POLY-FILM/PAC MAC 114#/R 2MIL		PACKAGING SYSTEM OF IN CORP		P-BAG	RM
229219	00040	07/07/2015	6	ROL	0	ROL	R7620	0010	POLY-FILM/PAC MAC 114#/R 2MIL		PACKAGING SYSTEM OF IN CORP		P-BAG	RM
228219	00010	07/17/2015	40,000.000	LB	0.000	LB	237	0010	Frozen Chicken Breast with Rib Meat	1 PM DOCK 1	BCK, LLC		P-MEAT	RM
228220	00010	07/31/2015	40,000.000	LB	0.000	LB	237	0010	Frozen Chicken Breast with Rib Meat	1 PM DOCK 1	BCK, LLC		P-MEAT	RM
228222	00010	08/14/2015	40,000.000	LB	0.000	LB	237	0010	Frozen Chicken Breast with Rib Meat	1 PM DOCK 1	BCK, LLC		P-MEAT	RM
226212	00010	07/10/2015	10	EA	0	EA	M-43467	0010	DOOR HINGE (SHEET METAL) RITTAL		STANDARD ELECTRIC SUPPLY CO		M-LATCH	MNT
229224	00010	07/17/2015	36,000.000	LB	33,00...	LB	4333	0010	PURCH WINGETTES SMALL/MEDIUM 9-11		CLAXTON POULTRY FARMS		P-MEAT	RM
229228	00010	08/04/2015	39,606.000	LB	39,60...	LB	865	0010	Med Breast Trim		BRAKEBUSH IRVING INC		P-MEAT	RM
229229	00010	08/11/2015	39,606.000	LB	12,60...	LB	865	0010	Med Breast Trim		BRAKEBUSH IRVING INC		P-MEAT	RM
229235	00010	07/30/2015	39,606.000	LB	33,48...	LB	4333	0010	PURCH WINGETTES SMALL/MEDIUM 9-11		CLAXTON POULTRY FARMS		P-MEAT	RM

Figure 23: Old SQVI Output Screen (Mygo Consulting Inc., n.d.)

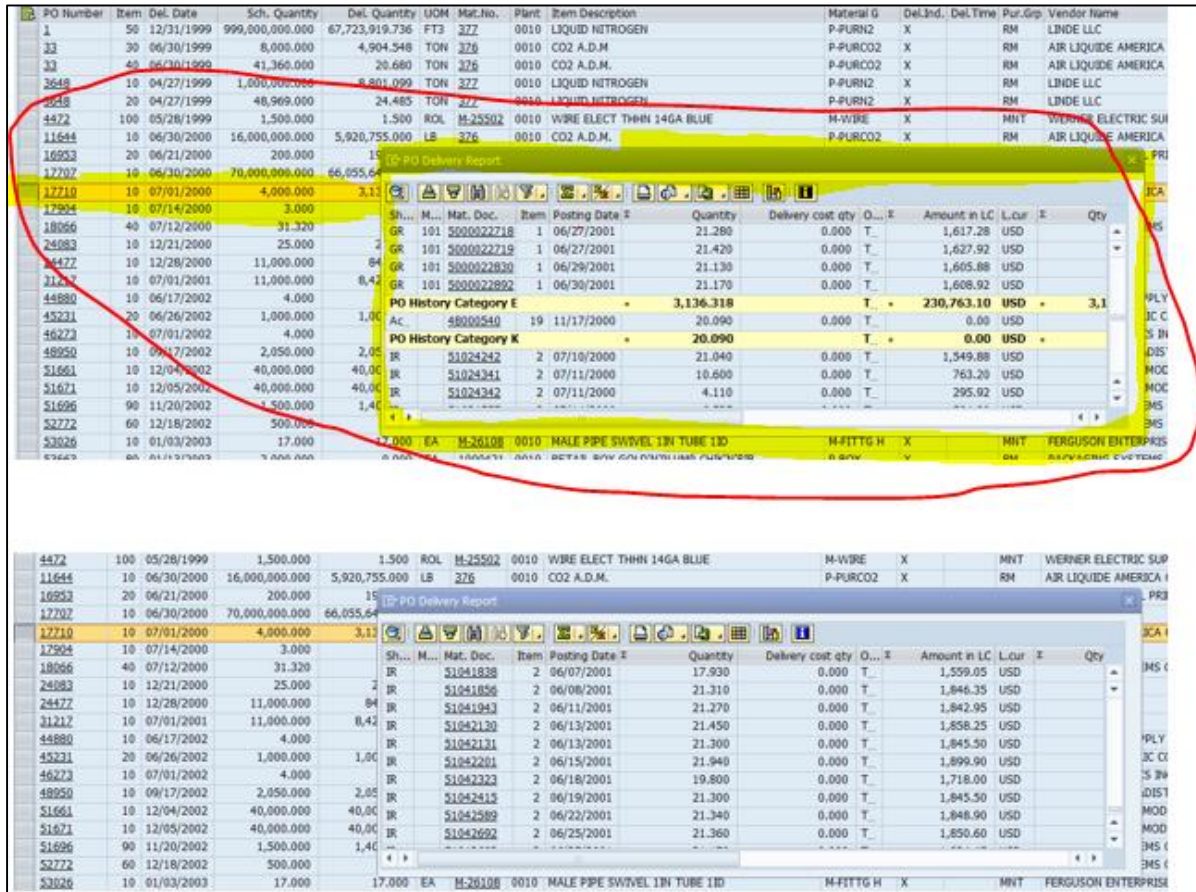
When executed, Old report wide run shows as in Figure 23 where in order to open actual Purchase Order user has to use Me23n transaction to verify this data and on order to see complete info regarding Material user has to use MM03 transaction similarly with the case of vendor, purchasing group, etc.

User Input Selection			
Purchasing Document		to	
Delivery Date		to	
Material		to	
Plant		to	
Material Group		to	
Delivery Time		to	
Delivery Completed		to	
Purchasing Group		to	

Output Specification	
Layout	

Figure 24: New ABAP ALV Grid Report Selection Screen (Mygo Consulting Inc., n.d.)

In Figure 24 it is the New ABAP ALV grid selection screen when report can be run using various selection parameters.



PO Number	Item	Del. Date	Sch. Quantity	Del. Quantity	UOM	Mat.No.	Plant	Item Description	Material G	Del.Ind.	Del. Time	Pur.Grp.	Vendor Name
1	50	12/31/1999	999,000,000.000	67,723,919.736	FT3	277	0010	LIQUID NITROGEN	P-PURH2	X		RM	LINDE LLC
33	30	06/30/1999	8,000.000	4,904.548	TON	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA
33	40	06/30/1999	41,360.000	20.680	TON	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA
3648	10	04/27/1999	1,000,000.000	8,801.099	TON	377	0010	LIQUID NITROGEN	P-PURH2	X		RM	LINDE LLC
4472	20	04/27/1999	48,969.000	24.465	TON	377	0010	LIQUID NITROGEN	P-PURH2	X		RM	LINDE LLC
4472	100	05/28/1999	1,500.000	1.500	ROL	M-25502	0010	WIRE ELECT THHN 14GA BLUE	M-WIRE	X		MNT	WERNER ELECTRIC SUP
11644	10	06/30/2000	16,000,000.000	5,920,755.000	LB	376	0010	CO2 A.D.M.	P-PURCO2	X		RM	AIR LIQUIDE AMERICA
16953	20	06/21/2000	200.000										
17707	10	06/30/2000	70,000,000.000	66,055.64									
17710	10	07/01/2000	4,000.000	3.13									
17904	10	07/14/2000	3.000										
18066	40	07/12/2000	31.320										
24083	10	12/21/2000	25.000										
24472	10	12/28/2000	11,000.000										
31212	10	07/01/2001	11,000.000	8.42									
44880	10	06/17/2002	4.000										
45231	20	06/26/2002	1,000.000	1.00									
46272	10	07/01/2002	4.000										
48950	10	09/17/2002	2,050.000	2.05									
51661	10	12/04/2002	40,000.000	40.00									
51671	10	12/05/2002	40,000.000	40.00									
51696	90	11/20/2002	1,500.000	1.40									
52772	60	12/18/2002	500.000										
53026	10	01/03/2003	17.000										

Figure 25: New ABAP ALV Output Screen (Mygo Consulting Inc., n.d.)

Figure 25 is the output screen here user can see every information with single transaction code, a popup window was generated in the red colored circle where user can track the purchase order history along with purchase order number ,quantity , unit of measure etc.in same screen.

Where it is possible to navigate and all necessary information can be seen in same window.

Recommendations

1. This customized reports are not only restricted to Materials Management module but also extends to other modules as well.
2. This product MyPTP manager, not only used for generating the reports but also extends to provide functionality like Easy procure which allows to create a bunch of Purchase Requisitions of same material and same plant and convert in to single Purchase Order (which is not currently enabled in standard SAP system) which reduces cost and time for user. This Easy Procure will allow you to take into consideration all the various vendor requirements, and set limits for those vendors. Based on those limits, you will be able to combine multiple purchase requisitions into one purchase order that optimizes procurement cost, and transportation cost.
3. Another key important functionality is Reminder concept which allows to utilize customized inbound and outbound reminders which will alert for certain pre-defined number of days prior to shipping, then the vendor gets a reminder and can be updated if any changes needed to be made and can be returned back to Purchasing in order to update the Purchase Order in the system.

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